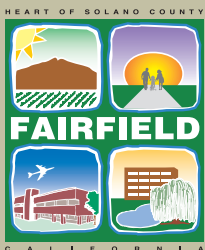


City of Fairfield

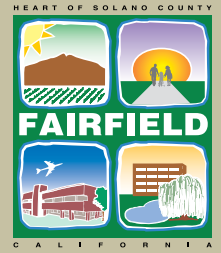
# Sustainability Initiative 2009

*Local Action for Global Change*



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## Executive Summary

The City of Fairfield has been a leader in the area of sustainability for a long time. In the early 90's, when City Hall was built, a cogeneration plant was installed to reduce energy costs. This action was way before its time. Today, the City is embarking on creating and executing a long term sustainability plan. Sustainability is an inclusive term that involves seeking ways to use less fossil fuel in our daily lives, generate less waste and recycles more, reduce water consumption, and find ways to rely on our community's assets (sun and wind) to power our community buildings, businesses, and households. A key goal for the City is to demonstrate leadership before it rolls out a sustainability program to the community.

The following outlines some of the tangible benefits to the City focusing resources on developing and implementing sustainability initiatives:

- **Cost Savings to the City** - By pursuing measures that reduce the City's use of energy, the City has the potential to generate tangible cost savings. For example, the City recently completed lighting audits that recommended improvements to various City facilities that have the potential to generate annual savings to the general fund of approximately \$38,000 with an investment from the City of \$37,000 after incentives. This represents a payback of just less than one (1) year!
- **Economic Development /Job Generation** – “Green” businesses and technology represent one of the fastest growing business sectors. This sector is very large in the Bay Area and includes everything from performing energy audits and home/business weatherization services to electric vehicle manufacturing and advanced fuel-cell research. Attracting businesses in this industry is a tremendous opportunity for Fairfield to grow its economy and generate jobs.
- **Future Grant Funding Opportunities** - Numerous funding opportunities have arisen from all levels of government – Federal (e.g., Energy Efficiency and Conservation Block Grant), State (e.g., Weatherization grant), and local (Bay Area Air Quality District and ABAG) to generate and implement sustainability initiatives. Without a commitment from all facets of the City organization, pursuing these opportunities is fruitless.
- **Marketing / Branding Opportunity** – Residents and businesses weigh a number of factors in locating to a community. For residents, this includes the quality of schools, community amenities such as libraries, parks, retail mix, and proximity to centers of employment. Fairfield has historically scored high on a number of these categories. As a result, Fairfield quickly grew from a city with a total population of 77,211 in 1990 to slightly more than 105,000 in 2008. For businesses, an assessment of the quality and diversity of housing, transportation networks, proximity to airports, and community amenities have all ranked high in making location decisions.

# Executive Summary

In addition to the factors above, both residents and businesses alike are increasingly making decisions based on an evaluation of a community's disposition to sustainability. For this reason, it is important to develop and communicate a cohesive approach to sustainability

- **Facilitates Community/Business Reinvestment** – By promoting energy efficiency initiatives to our residents and businesses, savings that are realized through lower utility bills have the potential to generate additional community expenditures. For businesses, energy cost savings could result in additional investment in their businesses yielding growth opportunities.

In addition to the benefits above, pursuing sustainability initiatives support the environment. Fairfield has demonstrated a commitment to these types of initiatives through the provision of open space, protected marsh, and trail systems, and parks that support a range of activities such as mountain biking, hiking, jogging, and hunting, all hallmarks of the community

To lay the foundation for a long-term commitment to sustainability, a “Green Team” (Team) was formed in January 2009. This team included representatives from every City department. The Team met monthly and was tasked with developing an estimate of the City's greenhouse gas (GHG) emissions, researching what other communities are doing, and developing a framework for future action. This Executive Summary summarizes some of the key conclusions found in the report.

## Greenhouse Effect and Global Climate Change

There is a scientific consensus that rising levels of greenhouse gas (GHG) emissions, typically measured in carbon dioxide (CO<sub>2</sub>) or equivalents, are contributing to a climate change that threatens health and welfare. The climate change is attributed to the greenhouse effect. The greenhouse effect is a natural phenomenon whereby certain gases in the earth's atmosphere, known as greenhouse gases, absorb heat that would otherwise escape to space. This heat originates from visible sunlight that warms the earth's surface. Subsequently, heat radiates from the surface to the atmosphere, where some of it is absorbed by greenhouse gases. The following illustrates the greenhouse effect.

### The Greenhouse Gas Effect

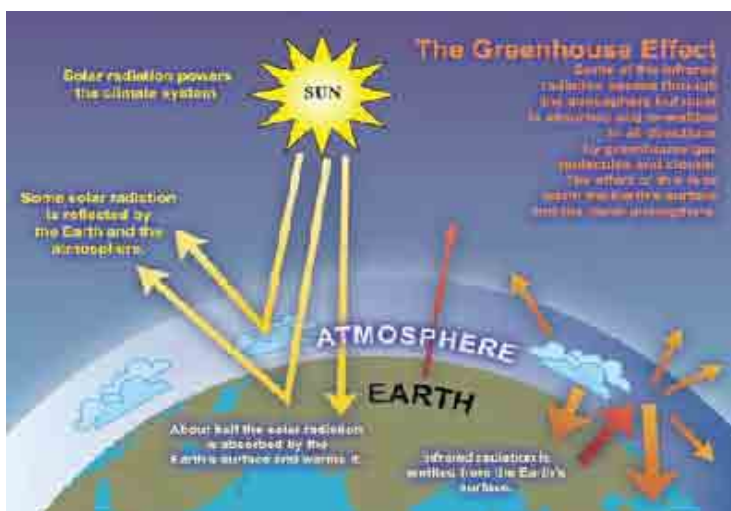


Figure 2-1

## Executive Summary

While a certain level of greenhouse gases is important to keep the earth at a comfortable temperature, the concern is that the levels of GHG that have been released into the atmosphere are at a level in which the climate and environment will be negatively impacted. The following indicates some of the outcomes of these rising levels of greenhouse gases:

- Increases in harmful air emissions.
- Increases in sea levels that will result in the erosion of beaches, bay shores, river deltas, marshes and wetlands and increased salinity of estuaries, marshes, rivers and aquifers. This increased salinity has the potential to damage or destroy crops in low-lying farmlands.
- Dwindling water supplies as seasonal storage in snow and ice disappears.
- Agricultural production may increase with slight warming, but will decrease thereafter due to changes in precipitation, weather extremes, and the spread of crop pests and diseases.

## Responding to Climate Change

Concerns over the impacts of climate change have spurred communities and businesses throughout the Bay Area into action. Communities have invested resources in efforts to document their GHG emissions levels, committed to GHG emissions reduction targets, and developed strategies to meet these targets. Many private companies have done the same. At the state level, concerns over climate change culminated in the adoption of AB32, which commits the state to strict reductions in GHG emissions by 2020 and 2050. While this legislation has not resulted in specific mandates at the local level, there is a general consensus that it is only a matter of time.

The following is a list of specific examples of innovative projects and initiatives that have been adopted in Solano County:

- Anheuser-Busch completed a six-acre solar array that will potentially generate three percent of the brewery's electricity. The brewery also constructed a Bio-Energy Recovery System, or BERS, using tax-exempt bonds. The BERS provides more than 15 percent of the brewery's fuel needs by turning nutrients in brewing wastewater into renewable biogas used to decrease the use of natural gas. Finally, A-B is planning to install a wind turbine to capitalize on the wind in Fairfield.
- Meyer Warehouse installed a 580kW solar electricity generating facility.
- Solano County has pursued a number of initiatives including three solar powered electricity generating facilities – a 230kW array on the roof of the Health and Social Services building on Beck Avenue; a 120kW array on the County Government Center's parking structure; and a 746kW array that covers part of the school district's bus yard and generates power for the adjacent Claybank Jail. In addition, the County adopted a voluntary Green Building Ordinance in 2008, and is in the process of completing a GHG emissions inventory.

# Executive Summary

- The City of Benicia, CA has pursued a number of sustainability initiatives. In 2007, Benicia adopted a resolution to act on climate protection and officially joined ICLEI's Cities for Climate Protection Campaign. In 2008, the City completed a GHG emissions inventory and is in the process of developing a Climate Action Plan ([www.BeniciaClimateActionPlan.com](http://www.BeniciaClimateActionPlan.com)).

## City of Fairfield, CA CO<sub>2</sub> Emissions

In 2008, the City of Fairfield generated approximately 16,500 Tonnes of CO<sub>2</sub>. Figure 3-1 below illustrates 2008 CO<sub>2</sub> emissions by category (i.e., City Fleet, Water Utility, Civic Center Complex, Streetlights, etc.) and Figure 3-2 depicts 2008 CO<sub>2</sub> emissions as a percent of total emissions.

2008 CO<sub>2</sub> Emissions (Metric Tons) by Category

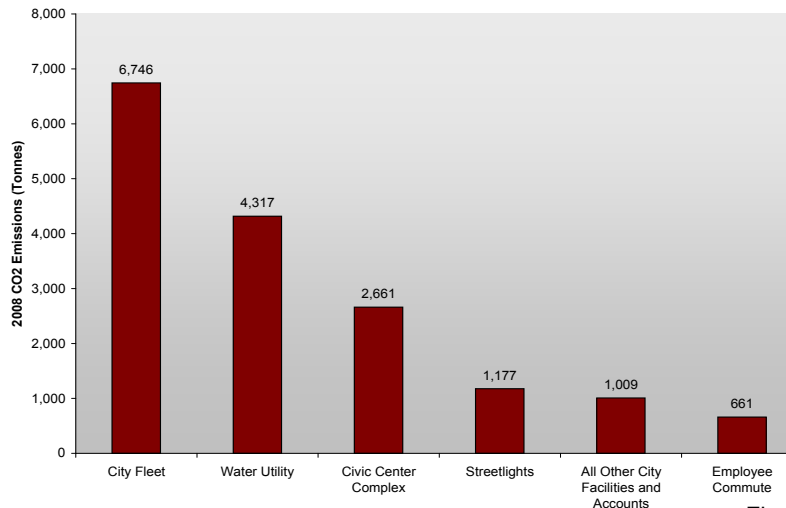


Figure 3-1

2008 CO<sub>2</sub> Emissions as a Percent of Total Emissions by Category

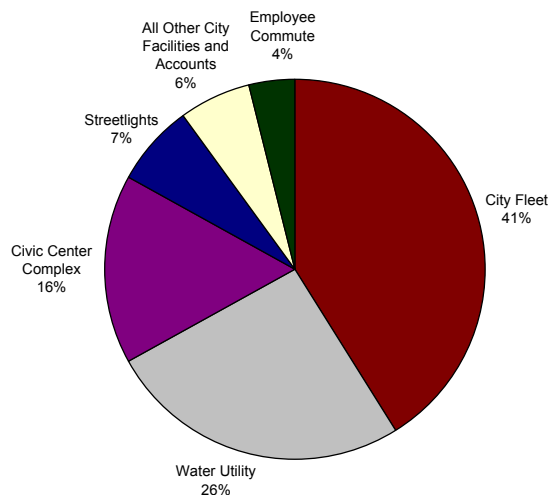


Figure 3-2



## Executive Summary

The City's largest source of CO<sub>2</sub> emissions is its fleet, with the City's water treatment facilities and related equipment, Civic Center Complex, and streetlights following in order. The City owns and operates an extensive fleet of vehicles. The City's fleet consists of public safety (Police and Fire) vehicles, vehicles operated by various departments and divisions, vehicles and equipment that serve the City's two public golf courses, and buses it operates to maintain a local and regional bus system. Emissions from the City's fleet is derived from diesel and unleaded fuel. The City's two water treatment facilities, Waterman and North Bay Regional Water Treatment Plants, provide high-quality water to Fairfield's residential and business communities. CO<sub>2</sub> emissions from the City's water treatment facilities, as well as pump stations in the water distribution system, are largely driven by its electricity consumption. The Civic Center Complex consists of City Hall, City Council Chambers, Police Headquarters, Community Center, Senior Center, and Fire Station 37. These facilities are powered by the City's cogeneration plant, which is powered by natural gas. CO<sub>2</sub> emissions from the City's street and pedestrian lights, of which there are more than 8,000, are entirely derived from their demand for electricity.

The EPA has developed a calculator (<http://www.epa.gov/cleanrgy/energy-resources/calculator.html>), which translates CO<sub>2</sub> emissions into everyday terms. The following outlines items that are equivalent to the City's 2008 emissions of 16,500 metric tons of CO<sub>2</sub>:

- Annual greenhouse gas emissions from 3,022 passenger vehicles;
- CO<sub>2</sub> emissions from 1,872,872 gallons of gasoline consumed; or
- CO<sub>2</sub> emissions from the electricity use of 2,228 homes per year.

A ten (10) percent reduction in CO<sub>2</sub> emissions (approximately 1,650 metric tons), according to the EPA is equivalent to the following:

- Annual greenhouse gas emissions from 302 passenger vehicles;
- CO<sub>2</sub> emissions from 187,287 gallons of gasoline consumed; or
- CO<sub>2</sub> emissions from the electricity use of 229 homes per year.

# Executive Summary

## Focusing the Organization on Sustainability

The City Manager's Office is responsible for implementation. This will include providing overall leadership and program management. Given the interdisciplinary nature of this initiative, a focused "Green Team" consisting of staff from departments throughout the City will continue to meet on a regular basis to develop ideas and accelerate implementation.

The City's approach to sustainability is focused on actions that demonstrate leadership and are building blocks to the development of a long-term sustainability strategy for the City to execute. These items include:

- Establishing a Commitment to Sustainability. This includes adopting resolutions, joining organizations, and fostering partnerships and affiliations that demonstrates the City's commitment.
- Develop long-term strategies such as a Municipal Sustainability Plan and Climate Action Plan that will serve as roadmaps for the organization and community to achieve cost savings through energy savings, reductions in GHG emissions, and energy independence.
- Leveraging partnerships and funding opportunities to generate cost savings, energy savings, and reduction in GHG emissions.

To jumpstart this initiative, the City is relying on the Energy Efficiency and Conservation Block Grant that allocated \$984,500 to the City and low-interest loans from the state. The City will also be proactive in pursuing future grant opportunities.





# Message from the City Manager

I am pleased to present this report on the City of Fairfield's initiative to develop a comprehensive sustainability and green program. The City of Fairfield has, over the years, initiated and executed sustainability efforts that were ahead of their time. An example is when the civic center complex was constructed; the City installed a cogeneration electric plant to reduce electricity consumption. This was way ahead of its time. Sustainability and green program efforts over the years however have been disjointed and there has not been an all-inclusive, sustained program in the City.

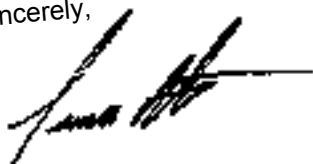
In 2006, the State of California passed landmark legislation in a bill known as AB32. AB 32 requires the California Air Resources Board (CARB) to develop regulations and market mechanisms that will ultimately reduce California's greenhouse gas emissions by 25 percent by 2020. Mandatory caps will begin in 2012 for significant sources and ratchet down to meet the 2020 goals. More recently in 2008, the State of California passed SB375. Yet again the State became the first in the nation to link greenhouse gas emissions, transportation funding, land use planning and housing policy. This legislation will encourage more compact development and use of transportation alternatives by offering local agencies transportation funding. Passage of these bills means that local agencies must be proactive in developing strategies and plans to reduce their own agency greenhouse gas emissions. Therefore, I assembled a team of employees and called them the "Green Team". Strategic overall direction for this effort was provided by the Assistant City Manager. This team was chaired by the Assistant Director of Public Works, Water Utilities, and included the hard work of many others that are listed at the end of this report. I want to commend this team for completing the initial phase of this initiative.

Global warming, sustainability, green initiatives, are all terms we read daily in the newspapers, on the Internet and in publication after publication. This preliminary report documents the City's greenhouse gas emissions and lays the groundwork for the creation of a comprehensive sustainability program.

This effort began with the City quantifying its greenhouse gas emissions and programs that have been implemented to reduce these emissions. The City has been environmentally responsive for many years. However, there is much more that can be done. The City needs to take a strategic approach to sustainability and green program initiatives.

This report concludes with a list of items that the City can execute over the next 12 to 18 months as well as mobilizing resources to becoming a leader in sustainability and green. We are very pleased to be working on this initiative as we are confident this program will result in fiscal savings to the city and also be good for the environment, thus making Fairfield a better place to live and work.

Sincerely,



Sean P. Quinn

City Manager



# Introduction

## Overview

Global climate change is an issue that has grown in importance as organizations such as the Intergovernmental Panel on Climate Change (IPCC)<sup>1</sup> and programs such as the U.S. Global Change Research Program (USGCRP) have demonstrated the potential for outcomes such as rising sea levels and higher global temperatures that threaten our environment and health.

Instead of assigning the responsibility of solving this problem to future generations, the time to act is now. While the City cannot solve global climate change by itself, by doing its share the City can nurture a healthy environment.

This chapter begins with a summary of global climate change and its potential impacts on the environment. This chapter then discusses how the State has responded and what this means to the City of Fairfield. Finally, this chapter addresses the ways in which the City will benefit from an investment of staff and resources in developing and supporting policies to cultivate and implement specific strategies and actions that promote sustainability throughout the organization and community.

## The Greenhouse Effect

The greenhouse effect is a natural phenomenon whereby certain gases in the earth's atmosphere, known as greenhouse gases, absorb heat that would otherwise escape to space. This heat originates from visible sunlight that warms the earth's surface. Subsequently, heat radiates from the surface to the atmosphere, where some of it is absorbed by greenhouse gases. Water vapor and carbon dioxide (CO<sub>2</sub>) are the most prolific of these gases. Other contributing gases include methane (CH<sub>4</sub>), nitrous oxide (NO<sub>2</sub>), ozone (O<sub>3</sub>) and halocarbons. Without the natural warming effect of these gases, the average surface temperature of the Earth would be well below freezing (14°F).

<sup>1</sup> The IPCC is a scientific intergovernmental body set up by the World Meteorological Organization (WMO) and by the United Nations Environment Programme. The IPCC was established to provide the decision-makers and others interested in climate change with an objective source of information about climate change. The IPCC can be found at the following link, <http://www.ipcc.ch/index.htm>.



# Introduction

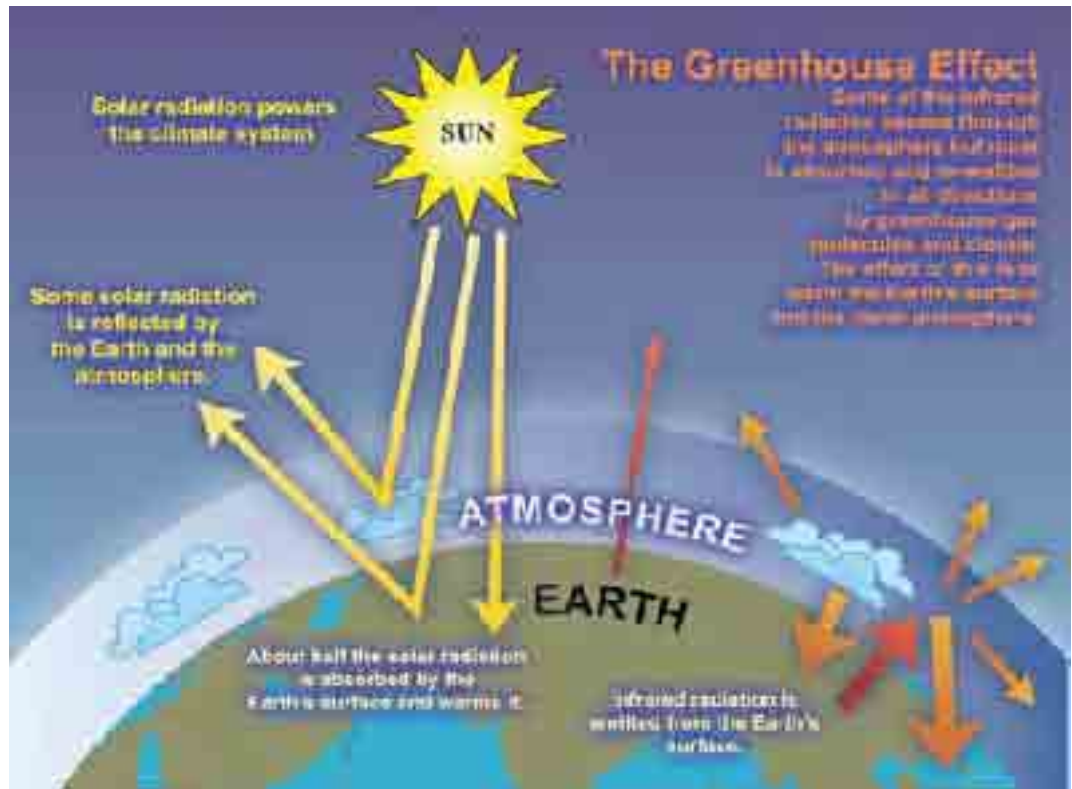


Figure 2-1

Source: [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Print\\_Ch01.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch01.pdf) 2007: Historical Overview of Climate Change.  
In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change

Recently elevated concentrations of greenhouse gases (GHG) in the atmosphere have had a de-stabilizing effect on the global climate, fueling the phenomenon commonly referred to as global warming. The global average surface temperature increased during the 20th century by about 1°F. According to NASA scientists, the 1990s was the warmest decade of the century, and the first decade of the 21st century is well on track to be another record-breaker. The years 2002, 2003, 2004 and 2005, along with 1998, were the warmest five years since the 1890s, with 2005 being the warmest year in over a century. The growth in (GHG) emissions has been attributed to human activities, primarily fossil fuel combustion and changes in land use, such as agriculture and deforestation.

## Impacts of Global Climate Change

The following outlines some of the potential impacts of increases in global climate change man-made GHG emissions.

- Public health is threatened. Higher temperatures can cause an increase in harmful air emissions. The more fuel evaporates, engines work harder, and demands for electric power increase along with an increase in power plant air pollution. High temperatures, strong sunlight, and a stable air mass are ideal for formation of ground-level ozone, the most health-damaging constituent of smog. As the temperature rises and air quality diminishes, heat-related health problems also increase.

Changing weather patterns will also change the distribution and incidence of insect and water-borne diseases, such as malaria, cholera and West Nile Virus, a disease of growing concern in our region.

- Sea levels will rise. The Pew Center on Climate Change has reported that sea level increases will result in the erosion of beaches, bay shores, river deltas, marshes and wetlands and increased salinity of estuaries, marshes, rivers and aquifers. This increased salinity could potentially damage or destroy crops in low-lying farmlands. Infrastructure at or near sea level, such as harbors, bridges, roads and even the San Francisco and Oakland International Airports are at risk of damage and destruction.
- Water supplies in some critical areas will dwindle as snow and ice disappear. One area of considerable concern is California's water supply. During the winter, high in the Sierra Nevada, snow accumulates in a deep pack, preserving much of California's water supply in "cold storage" for the hot, dry summer. If winter temperatures are warmer however, more precipitation will fall as rain, decreasing the size of the snowpack. Heavier rainfall in the winter could bring increased flooding. Less spring runoff from a smaller snowpack will reduce the amount of water available for hydroelectric power production and agricultural irrigation.
- Natural disasters such as droughts and floods will become more common.
- Agricultural production may increase with slight warming, but will decrease thereafter due to changes in precipitation, weather extremes, and the spread of crop pests and diseases.

Many greenhouse gases have lifetimes of decades or even centuries in the atmosphere, so the problem cannot be eliminated quickly. Thus, the problems we are experiencing today do not accurately represent the full effects we may see years from now based on current levels of greenhouse gases.





# Introduction

## California's Response to Global Climate Change

### AB 32 – Global Warming Solutions Act of 2006

California has assumed a leadership role in adopting legislation to reduce the state's impact on the environment. The most widely discussed piece of legislation in recent years is AB 32, the Global Warming Solutions Act of 2006. AB 32 requires the Air Resources Board to adopt regulations aimed at curbing GHG emissions. Specifically, AB 32 establishes a statewide greenhouse gas emissions cap for 2020, based on 1990 emissions level. After that, California's goal is a reduction of 80 percent from 1990 levels by 2050. An AB 32 fact sheet prepared by the Air Resources Board has been attached (Attachment A) for reference<sup>2</sup>. The California Air Resources Board has developed a Scoping Plan that outlines a number of strategies California will use to reduce GHG emissions that cause climate change. These strategies include<sup>3</sup>:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

AB 32 does not consist of specific mandates for local governments, but it does acknowledge the important role that local governments can play in reducing GHG. It encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State commitment to reduce greenhouse gas emissions by approximately 15 percent from current levels by 2020.

<sup>2</sup> The fact sheet can also found at [www.arb.ca.gov/cc/factsheets/ab32factsheet.pdf](http://www.arb.ca.gov/cc/factsheets/ab32factsheet.pdf).

<sup>3</sup> Climate Change Scoping Plan, page 16.

# Introduction

## SB 375<sup>4</sup>

Subsequent to AB 32, on September 30, 2008, Governor Schwarzenegger signed SB 375, which establishes mechanisms for the development of regional targets for reducing passenger vehicle greenhouse gas emissions. Through the SB 375 process, regions are expected to integrate development patterns and the transportation network in a way that achieves the reduction of greenhouse gas emissions while meeting housing needs and other regional planning objectives. SB 375 requires the ARB to develop, in consultation with metropolitan planning organizations (MPOs), passenger vehicle greenhouse gas emissions reduction targets for 2020 and 2035 by September 30, 2010.

Transportation planning is done on a regional level in major urban areas through the Metropolitan Planning Organizations. These MPOs are required by the federal government to prepare regional transportation plans (RTPs) in order to receive federal transportation dollars. RTPs must reflect the land uses called out in city and county general plans. SB 375 requires MPOs to prepare a sustainable communities strategy to reach the regional target provided by the ARB. MPOs would use the sustainable communities strategy for the land use pattern underlying the region's transportation plan.

SB 375 also provides incentives – relief from certain California Environmental Quality Act (CEQA) requirements - for development projects that are consistent with regional plans that achieve the targets.

In the Bay Area, the Joint Policy Committee (JPC) is a regional planning consortium responsible for coordinating the efforts of the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), the San Francisco Bay Conservation and Development Commission (BCDC), and the Metropolitan Transportation Commission (MTC) in implementing SB 375. SB 375 explicitly assigns responsibilities to ABAG and MTC, as the Bay Area's MPO, to implement the bill's provisions for the Bay Area. MTC is responsible for developing the transportation plan for the Bay Area and ABAG is responsible for addressing land use concerns.

## Other Notable Legislation<sup>5</sup>

AB 32 and SB 375 are two pieces of legislation that are part of a larger web of state legislation and actions that incentivize and support public and private efforts to reduce GHG emissions. The remainder of this section provides a brief overview of some of the legislation.

- Financing Renewable Energy and Energy Efficiency Improvements – AB 811 (Adopted 2008) and SB 279 (Pending).

<sup>4</sup> Excerpted from portion of the Scoping Plan, pages 47-48.

<sup>5</sup> Source: <http://www.gosolarcalifornia.ca.gov/news/legislation.html>.







## Introduction

AB 811 (Adopted 2008) amends the 1911 Act regarding Assessment Districts and authorizes California cities and counties to designate areas within which city officials and willing property owners may enter into contractual assessments to finance the installation of distributed generation renewable energy sources, including solar, and energy efficiency improvements. AB 811 is limited to developed property.

SB 279 amends the Mello-Roos Community Facilities Act of 1982 to allow Community Facilities Districts (CFDs) to levy special taxes to finance renewable energy and energy efficiency improvements to private property. SB 279 allows financing of renewable energy and energy efficiency improvements for new development. SB 279 in an earlier version (AB 1709) was approved by the State legislature in 2008, but vetoed by the Governor.

Some of the benefits of SB 279 and AB 811 are:

- Renewable energy and energy efficiency improvements may be financed without a significant down-payment.
- The obligation to repay the cost of the renewable energy and energy efficiency improvements are attached to the property tax bill. It will not be “due on sale” of the benefited property (which is the case with traditional equity lines of credit) and the lender will have a “super lien” on the benefited property that is equal to the lien of general ad valorem property taxes.

Cities and counties throughout California are in the beginning stages of developing programs that implement this legislation. Early adopters include Berkeley, Palm Desert, and Sonoma County. Each of their models varies. Efforts to organize cities and counties on a regional basis are being coordinated by organizations such as Association of Bay Area Governments and California Communities. The City of Fairfield is monitoring the progress of efforts to establish regional coordination and the status of SB 279 to find ways to offer these financing opportunities to the residents and businesses of Fairfield.

- AB 2466 (2008). This bill authorizes a local government to receive a credit for electricity supplied to the electric grid by an eligible renewable generating facility. The generating facility and the benefitting account that receives the bill credit must both be located within the geographic boundary of the local government but do not have to be at the same site. The implementation of this legislation is to be determined, but it provides an opportunity for the City to consider the potential of certain assets to generate power.

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By taking action, the City will  
nurture a healthy environment for  
its residents and businesses.

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## Developing a Local Response The Benefits to Taking Action Now

With a deep scientific basis and global consensus that how we live, work, and play can have a negative impact on the environment and the state's aggressive response to reducing GHG emissions, now is the time for Fairfield to take action. The City of Fairfield will pursue initiatives that will establish the City as a leader and community role model. By taking this action, the City will nurture a healthy environment for its residents and businesses, a reduction in energy use that will lead to lower greenhouse gas emissions, generate tangible and lasting cost savings, and achieve an energy independent future.

The following outlines some of the tangible benefits to the City for focusing resources on developing and implementing sustainability initiatives:

- **Cost Savings to the City** - By pursuing measures that reduce the City's use of energy, the City has the potential to generate tangible cost savings. For example, the City recently completed lighting audits that recommended improvements that will reduce the City's energy consumption.
- **Economic Development /Job Generation** – “Green” businesses and technology represent some of the few growing industrial sectors in this struggling economy. This industry is diverse and includes everything from performing energy audits and home/business weatherization services to electric vehicle manufacturing and advanced fuel-cell research. Attracting businesses in this industry is a tremendous opportunity for Fairfield to grow its economy and generate jobs.

The City is poised to take advantage of these growth opportunities. The City has:

- Diverse housing stock with a number of neighborhoods in Central Fairfield that would benefit from energy audits and home weatherization.
- A variety of commercial districts with a mix of new and older development.
- Vacant land that is ideally suited for office, flexible industrial development, and manufacturing uses.





## Introduction

- **Future Grant Funding Opportunities** - Numerous funding opportunities have arisen from all levels of government – Federal (e.g., Energy Efficiency and Conservation Block Grant), State (e.g., Weatherization grant), and local (Bay Area Air Quality District and ABAG) to generate and implement sustainability initiatives. Without a commitment from all facets of the City organization, pursuing these opportunities is fruitless.
- **Marketing / Branding Opportunity** – Residents and businesses weigh a number of factors in locating to a community. For residents, this includes the quality of schools, community amenities such as libraries, parks, retail mix, and proximity to centers of employment. Fairfield has historically scored high on a number of these categories. As a result, Fairfield quickly grew from a city with a total population of 77,211 in 1990 to slightly more than 105,000 in 2008. For businesses, an assessment of the quality and diversity of housing, transportation networks, proximity to airports, and community amenities have all ranked high in making location decisions.

In addition to the factors above, both residents and businesses alike are increasingly making decisions based on an evaluation of a community's disposition to sustainability. For this reason, it is important to develop and communicate a cohesive approach to sustainability.

- **Facilitates Community/Business Reinvestment** – By promoting energy efficiency initiatives to our residents and businesses, savings that are realized through lower utility bills have the potential to generate additional community expenditures. For businesses, energy cost savings could result in additional investment in their businesses yielding growth opportunities.

This is not just rhetoric, and the City of Fairfield is not alone. There are examples throughout the County of innovative projects and initiatives that have been adopted. The following is a sample:

- **Anheuser-Busch**, in April 2009, celebrated the completion of a six-acre solar array that will potentially generate three percent of the brewery's electricity. The brewery also constructed a Bio-Energy Recovery System, or BERS, using tax-exempt bonds which provides more than 15 percent of the brewery's fuel needs by turning nutrients in brewing wastewater into renewable biogas used to decrease the use of natural gas. Finally, A-B is planning to install a wind turbine to capitalize on the wind in Fairfield.
- **Meyer Warehouse**, located at three sites in Fairfield, installed a 580kW solar electricity generating facility.

# Introduction

- Solano County has pursued a number of sustainability initiatives. The County has installed three solar powered electricity generating facilities – a 230kW array on the roof of the Health and Social Services building on Beck Avenue; a 120kW array on the County Government Center's parking structure; and a 746kW array that covers part of the school district's bus yard and generates power for the adjacent Claybank Jail. In addition, the County adopted a voluntary Green Building Ordinance in 2008, and is in the process of completing a GHG emissions inventory.
- The City of Benicia, CA has pursued a number of sustainability initiatives. In 2007, Benicia adopted a resolution to act on climate protection and officially joined ICLEI's Cities for Climate Protection Campaign. In 2008, the City completed a GHG emissions inventory and is in the process of developing a Climate Action Plan ([www.BeniciaClimateActionPlan.com](http://www.BeniciaClimateActionPlan.com)).

## Fairfield's Green Team

The City's first step involved forming a Green Team ("Team") that was tasked to understand the City's GHG emissions, research what other communities are doing, and develop a framework for future action. In total, the Team was comprised of 20 representatives from every Department and various divisions including water, housing, finance, human resources, and vehicle maintenance.

The team structured around three substantive issues: City Operations (Green Technology and Practices in City Facilities), Green City Development/Redevelopment (SB375), and Living Green (City assistance and information to existing residents and businesses). In addition, the Team created subteams for supporting functions (Utility Relations, Public Information & Event Planning, and Grants & Finance).



The Team's first meeting occurred in January 2009, and subsequently met on a monthly basis. Representatives of PG&E were invited to an early meeting and the group spent a considerable amount of time researching and understanding current legislation, initiatives that have been pursued by surrounding organizations, membership organizations, and attending conferences. The results of this work are summarized throughout the remainder of this report.





# CO<sub>2</sub> Emissions

## Overview

This chapter provides an overview of CO<sub>2</sub> emissions generated by municipal operations. This includes CO<sub>2</sub> emissions that arise from the following:

- Fuel (gas and diesel) consumed by the City's fleet. This includes vehicles owned and operated by Police, Fire, and departments throughout the City. The City's fleet also includes the buses that provide public transportation services to the community.
- Demand for electricity and natural gas from various facilities, this includes the buildings the City owns and operates, water treatment operations, streetlights;
- CO<sub>2</sub> emissions from employees commuting to work.

This data was largely gathered from internal sources, with the exception of electricity and natural gas usage that was supplied by PG&E.

In addition to providing an overview of the City's CO<sub>2</sub> emissions, this chapter compares Fairfield's emissions to publicly available data on emissions from other communities in the Bay Area that have performed greenhouse gas emission inventories and a discussion of how to put the City's emissions in context.



# CO<sub>2</sub> Emissions

In 2008, the City of Fairfield generated approximately 16,500 Tonnes<sup>1</sup> of CO<sub>2</sub>. Figure 3-1 below illustrates 2008 CO<sub>2</sub> emissions by category (i.e., City Fleet, Water Utility, Civic Center Complex, Streetlights, etc.) and Figure 3-2 on the following page depicts 2008 CO<sub>2</sub> emissions as a percent of Total Emissions.

## 2008 CO<sub>2</sub> Emissions (Metric Tons) by Category

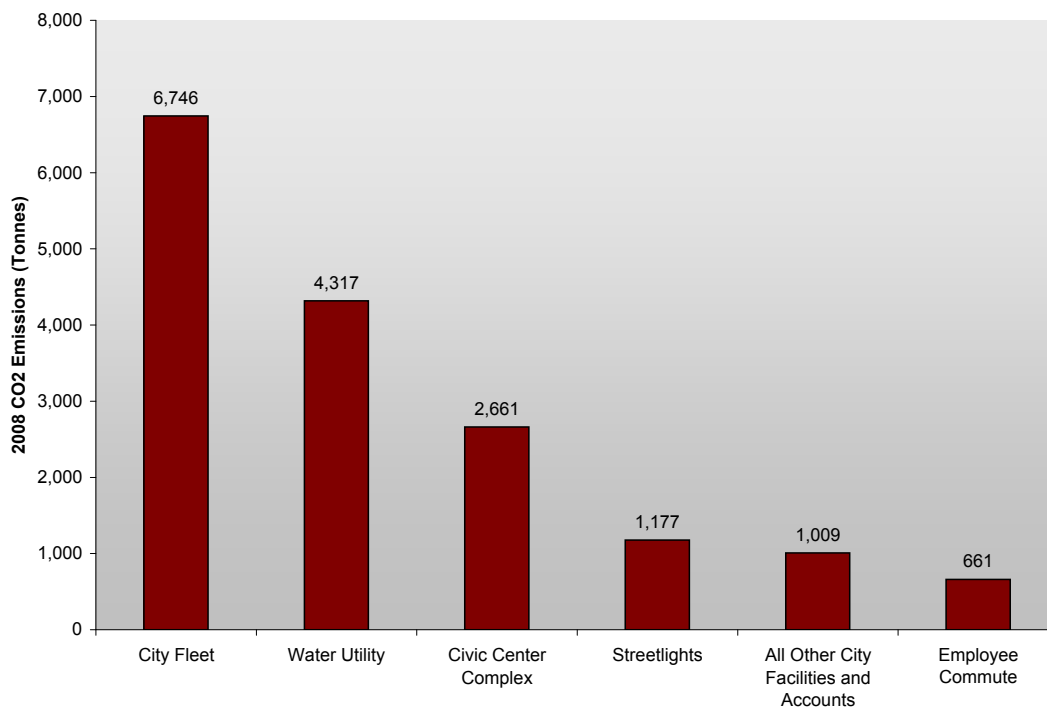


Figure 3-1

Source: [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Print\\_Ch01.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch01.pdf) 2007: Historical Overview of Climate Change. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change

<sup>1</sup> "Tonnes" are equivalent to metric tons. One metric ton is 1,000 kilograms or about 2,205 pounds.



# CO<sub>2</sub> Emissions

## 2008 CO<sub>2</sub> Emissions as a Percent of Total Emissions by Category

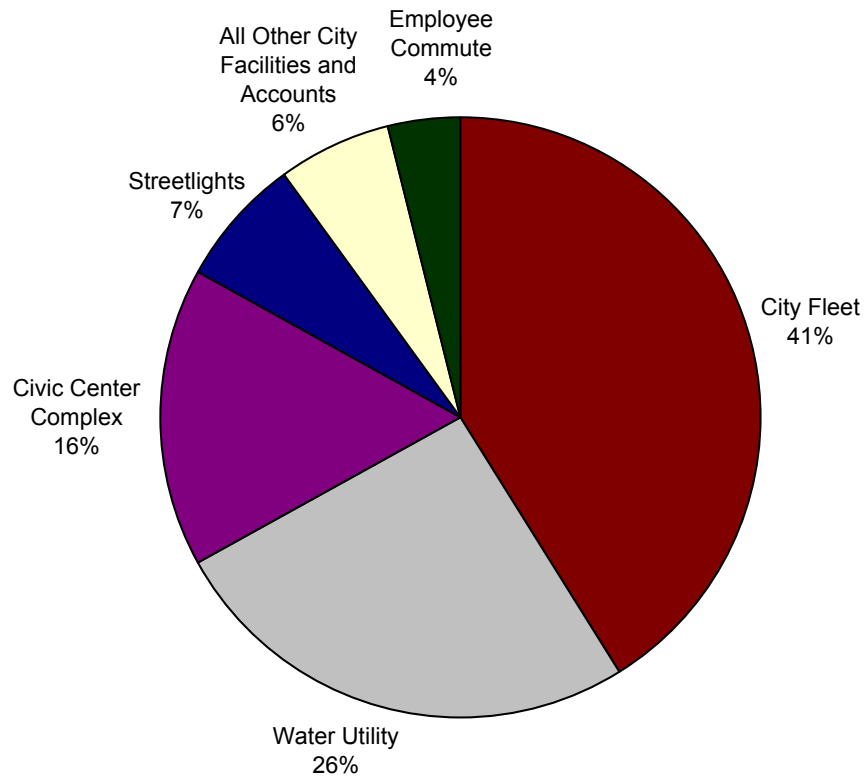


Figure 3-2

The City's largest source of CO<sub>2</sub> emissions is its fleet, with the City's water treatment facilities and related equipment, Civic Center Complex, and streetlights following in order. The City owns and operates an extensive fleet of vehicles, which is discussed in more detail in Chapter 6. The City's fleet consists of public safety (Police and Fire) vehicles, vehicles operated by various departments and divisions, vehicles and equipment that serve the City's two public golf courses, and buses it operates to maintain a local and regional bus system. Emissions from the City's fleet is derived from diesel and unleaded fuel. The City's two water treatment facilities, Waterman and North Bay Regional Water Treatment Plants, provide high-quality water to Fairfield's residential and business communities.



# CO<sub>2</sub> Emissions

CO<sub>2</sub> emissions from the City's water treatment facilities, as well as pump stations in the water distribution system, are largely driven by its electricity consumption. The Civic Center Complex consists of facilities such as City Hall, City Council Chambers, Police Headquarters, Community Center, Senior Center, and Fire Station 37, that are powered by the City's cogeneration plant, which is powered by natural gas. CO<sub>2</sub> emissions from the City's street and pedestrian lights, of which there are more than 8,000, are entirely derived from their demand for electricity. (Conversion factors are provided by PG&E: 0.542 pounds CO<sub>2</sub> per kilowatt-hour for electricity and 12.446 pounds per therm of natural gas.)

## CO<sub>2</sub> Emissions Comparison

To put Fairfield's CO<sub>2</sub> emissions in perspective, data from surrounding communities were obtained. In every case, except for Fairfield, this information was developed from formal greenhouse gas emission inventories prepared using the Clean Air and Climate Protection ("CACP") software package developed by ICLEI and the EPA. Due to the methodology employed in using the CACP software, all of the communities surveyed in the table below have GHG emissions data for 2005. Fairfield's GHG emissions are for 2008. Since more current data is not available for the communities below, it is not possible to compare 2008 emissions data. Should Fairfield become a member of ICLEI, a GHG emissions inventory will be developed using the CACP software, which should allow Fairfield to develop an inventory for 2005.

---

The majority of the  
City's CO<sub>2</sub> emissions  
emanates from electricity.

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## CO<sub>2</sub> Emissions

In reviewing data for other communities (i.e. Richmond, Fremont, Alameda and Hayward), the City of Fairfield's CO<sub>2</sub> emissions are about 1.5 times greater than the next highest emitter.

All of the reviewed communities, except Fairfield, calculated their CO<sub>2</sub> emissions using software from ICLEI and the Environmental Protection Agency (EPA). Without having access to this software, it is impossible to determine if this is the basis for the disparity. Other reasons for Fairfield's higher level of emissions relative to other communities are likely attributed to the extensive services provided by Fairfield and environmental differences (e.g., Fairfield is in a warmer climate zone).

For many, if not all, of the Bay Area communities listed in the table above, water and public transportation are provided by a third party. Benicia operates its own water treatment plant like Fairfield and also operates its own wastewater treatment plant for sewer. Hayward is an exception in that similar to Fairfield, it owns and operates its own water distribution system. However, Hayward's water system only has the capacity to provide up to 32 million gallons of water per day according to the City's General Plan and the City's 2005 Urban Water Management Plan indicated that demand for water in 2005 was estimated at 19 million gallons per day. In comparison, after the modernization of the Waterman Treatment Plant, Fairfield will have the ability to provide up to 70 million gallons of water per day.

## What Does This All Mean?

The EPA has developed a calculator (<http://www.epa.gov/cleanrgy/energy-resources/calculator.html>), which translates CO<sub>2</sub> emissions into everyday terms. The following outlines items that are equivalent to the City's 2008 emissions of 16,000 metric tons of CO<sub>2</sub>:

- Annual greenhouse gas emissions from 2,930 passenger vehicles;
- CO<sub>2</sub> emissions from 1,816,118 gallons of gasoline consumed; or
- CO<sub>2</sub> emissions from the electricity use of 2,219 homes per year.

A ten (10) percent reduction in CO<sub>2</sub> emissions (approximately 1,600 metric tons), according to the EPA is equivalent to the following:

- Annual greenhouse gas emissions from 293 passenger vehicles;
- CO<sub>2</sub> emissions from 181,612 gallons of gasoline consumed; or
- CO<sub>2</sub> emissions from the electricity use of 222 homes per year.





# City Facilities

## Overview

This chapter provides an overview of the CO<sub>2</sub> emissions resulting from the City's electricity and natural gas consumption. The City of Fairfield owns, operates, and maintains numerous buildings and community facilities that are scattered throughout the city. The following table provides a listing of selected buildings along with key building statistics.

Building / Facility	Address	Year Completed	Building Size (Sq Ft)
Civic Center Complex (1)			
City Hall	1000 Webster Street	1970	30,000
City Council Chambers	1000 Webster Street	1970	3,742
Police Building	1000 Webster Street	1970	34,320
Community Center	1000 Webster Street	1970	26,813
Senior Center	1200 Civic Center Drive	1980/1988	26,493
Fire Station #37	1200 Kentucky Street	2003	16,404
Corporation Yard	420 Gregory Lane	1974	4,960
Fairfield Center for Creative Arts	1035 Texas Street	1990	22,374
Allan Witt Multi-Sports Center	West Texas / Fifth Streets	1977	22,260
Police Training Facility and Firing Range	1717 Clift Lane	2008	39,000
Fire Station 35	473 #A Edison Court	N/A	N/A
Fire Station 38	1633 Union Avenue	1966	10,196
Fire Station 39	1975 Huntington Drive	1976	3,323
Fire Station 40	2555 Hilborn Drive	1986	2,836
Fire Station 41	3200 N. Texas Street	2003	5,688
Fairfield Transportation Center	200 Cadenasso Drive	2001	12,408
Paradise Valley Clubhouse	3950 Paradise Valley Drive	1993	21,986
Rancho Solano Clubhouse	3250 Rancho Solano Pkwy	1990	25,400
	Total		308,203

In addition to these facilities, the City owns and operates numerous parks, recreation facilities, two water treatment facilities and the related transmission infrastructure to deliver water to Fairfield's residents and businesses.

## Electricity and Natural Gas Usage

PG&E provided data to the City regarding its historical electricity and natural gas usage. The table below indicates that from 2004 to 2008, the City used on average 24,125,345 kWh of electricity and 410,181 therms of natural gas.

### Annual Electricity and Natural Gas Usage

Year	Electricity (kWh)	Natural Gas (Therms)
2008	25,956,151	488,314
2007	24,200,835	483,176
2006	22,822,032	460,136
2005	23,447,452	356,212
2004	24,200,255	266,066
Average	24,125,345	410,781
Median	24,200,255	460,136

Figure 4-1





# City Facilities

## Costs Related to Electricity/Natural Gas Usage

PG&E also provided data to the City regarding its historical expenditures on electricity and natural gas. The table below indicates that from 2004 to 2008 the City spent on average \$2,281,289 per year on electricity and \$154,030 per year on natural gas.

Electricity and Natural Gas Expenditures

Year	Electricity	Natural Gas	Total
2008	\$2,558,697	\$168,855	\$2,727,552
2007	\$2,306,268	\$161,325	\$2,467,593
2006	\$2,147,986	\$147,513	\$2,295,499
2005	\$2,135,901	\$162,053	\$2,297,954
2004	\$2,257,594	\$130,404	\$2,387,998
Average	\$2,281,289	\$154,030	\$2,435,319
Median	\$2,257,594	\$161,325	\$2,387,998

Figure 4-2

A variety of funding sources are responsible for these expenses, but the two primary sources are the General Fund and the Water Fund. The General Fund is responsible for numerous facilities including the Civic Center Complex, Fire Stations, streetlights, Firing Range/Training Facility, parks and related facilities. The Water Fund is responsible for the City's two water treatment plants and related distribution facilities.



## Converting City of Fairfield Electricity and Natural Gas to CO<sub>2</sub> Emissions

The City's electricity and natural gas consumption have been converted to CO<sub>2</sub> emissions using standardized carbon conversion factors provided by PG&E<sup>1</sup>. The following chart depicts the City's CO<sub>2</sub> emissions from 2004 to 2008, in which CO<sub>2</sub> emissions increased at an average annual rate of 5.5%.

Carbon Dioxide (Metric Tons) Emissions by Year

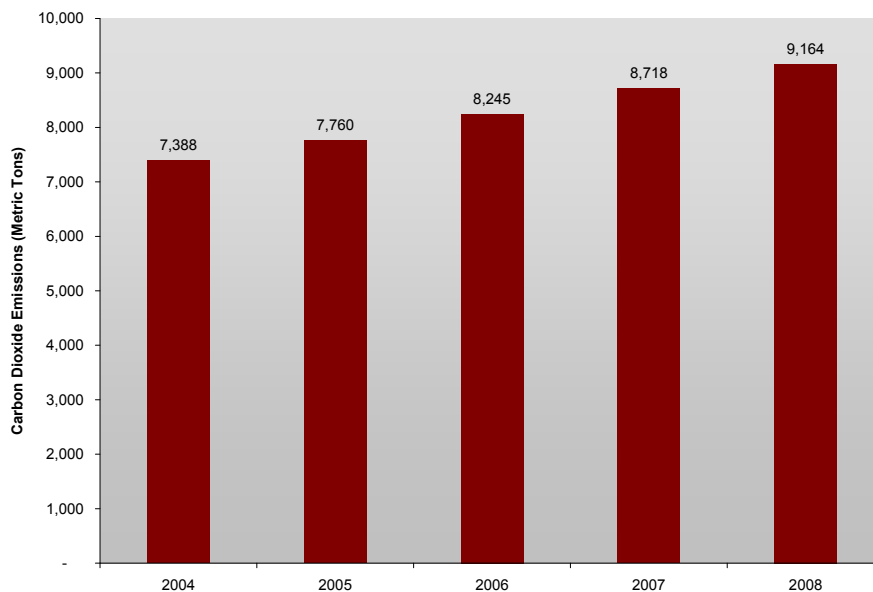


Figure 4-3

<sup>1</sup> To convert kWh to Metric Tons of CO<sub>2</sub> – One Metric Ton of CO<sub>2</sub> = ((One kWh of Electricity\*.525 lbs of CO<sub>2</sub> per kWh)/(2,205 lbs. CO<sub>2</sub> per Metric Ton)). To convert One Therm to Metric Tons of CO<sub>2</sub> – One Metric Ton of CO<sub>2</sub> = ((One Therm of Natural Gas\*13.466 lbs CO<sub>2</sub> per Therm)/(2,205 lbs. CO<sub>2</sub> per Metric Ton)).



# City Facilities

In looking at the City's usage of electricity and natural gas for all of its buildings, water treatment facilities, and streetlights, the figure below demonstrates that the majority of the City's CO<sub>2</sub> emissions emanates from electricity. From 2004 to 2008, on average, CO<sub>2</sub> emissions from electricity accounted for approximately 70% of the City's CO<sub>2</sub> emissions, while natural gas accounted for approximately 30%.

Breakdown of Carbon Dioxide (Metric Tons) Emissions by Year and Energy Type (Electricity and Natural Gas)

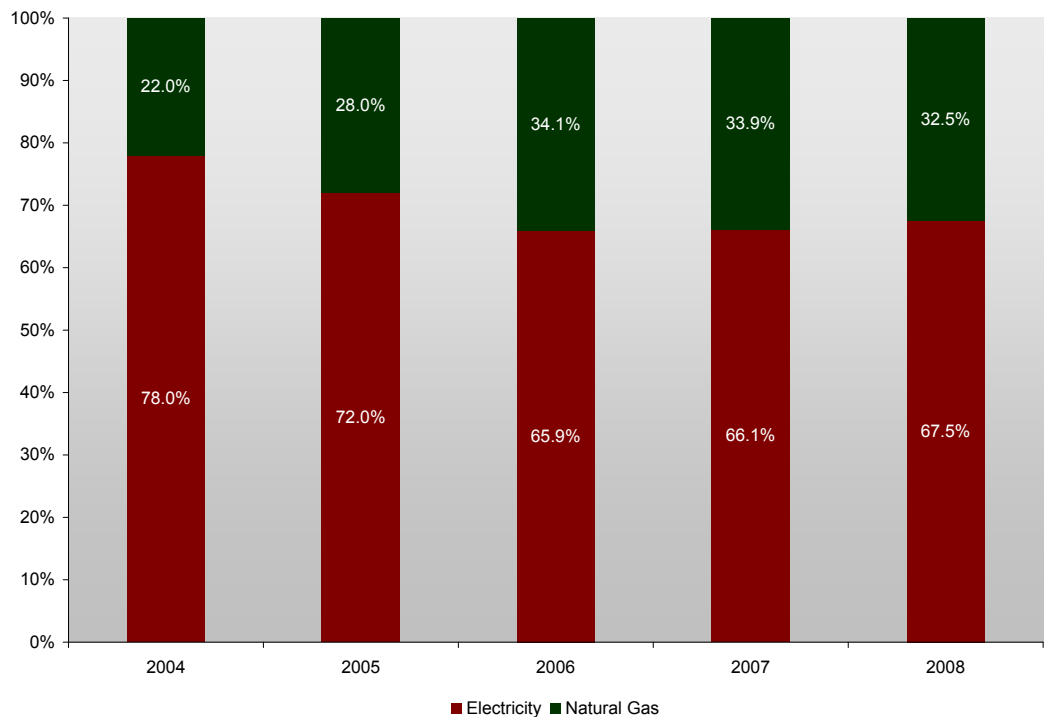


Figure 4-4





# City Facilities

## CO<sub>2</sub> Emissions by Facility from Electricity and Natural Gas Usage

As it pertains to electricity and natural gas, the following pie chart demonstrates that almost 90% of CO<sub>2</sub> emissions come from three general areas: the City's two water treatment facilities and related distribution equipment (47%), City Hall (29%), and streetlights (13%).

Distribution of 2008 Electricity and Natural Usage

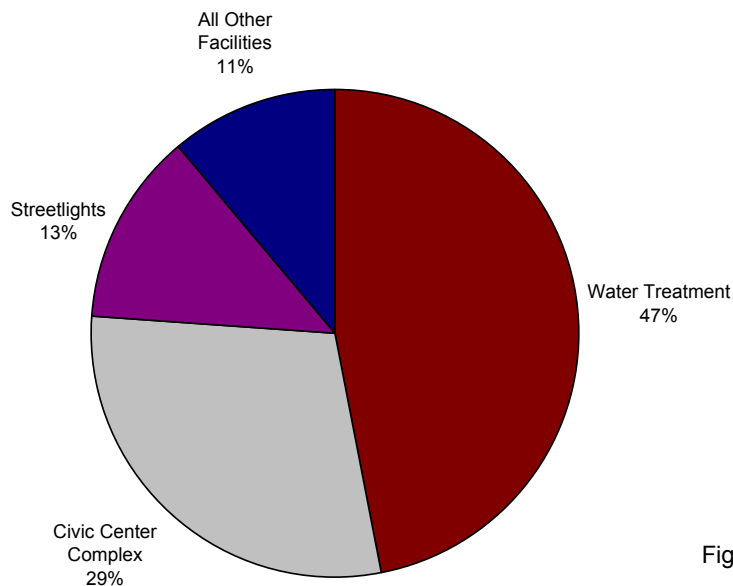


Figure 4-5

The remainder of this section discusses CO<sub>2</sub> emissions from some of the City's largest users of electricity and natural gas – Water Treatment Facilities; streetlights, and the Civic Center Complex.



# City Facilities

## Water Treatment Facilities

In looking solely at electricity and natural gas consumption (excluding fuel consumption by the city vehicle fleet), the City's two water treatment facilities and associated transmission network are the City's number one power consumer and generator of CO<sub>2</sub> emissions. From 2004 to 2008, CO<sub>2</sub> emissions from the City's water treatment facilities and related transmission infrastructure ranged from 3,781 (2005) to 4,317 (2008) metric tons.

### Carbon Dioxide (Metric Tons) Emissions by Year for Water Treatment Facilities

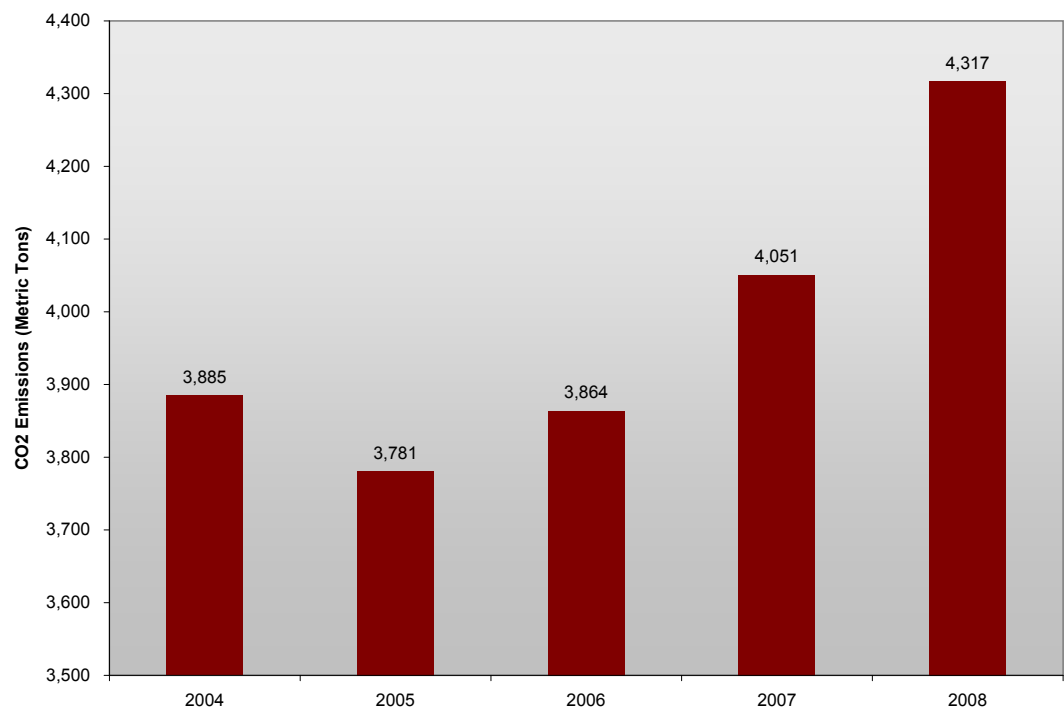


Figure 4-6

Nearly all of the CO<sub>2</sub> emissions from the water treatment facilities are due to its demand for electricity. In 2008, approximately 95% of CO<sub>2</sub> emissions were from electricity consumption.

The water utility's demand for electricity is directly affected by water use. Pumping facilities at the treatment plants and within the distribution system are powered to pressurize pipes and fill reservoirs. As the city conserves water, energy consumption will also decline.

Power consumption at the Waterman Treatment Plant has been relatively flat over the past five years. Coinciding with the construction activity that began in 2007, there has been an increase in power consumption, only some of which is likely to be sustained once the expansion is completed.

# City Facilities

The North Bay Regional Water Treatment Plant has seen a rise in power consumption in the 2008 calendar year. This is likely due to increased use of the facility with the construction activity that has been occurring at the Waterman Plant. Once the expansion of the Waterman Plant is complete, power demand should decrease.

Chapter 5 provides more discussion on the City's water treatment facilities including its commitment to water conservation and energy efficiency

## Civic Center Complex

The Civic Center Complex consists of six (6) buildings: City Hall, Community Center, Council Chambers, Police Department, Senior Center, and Fire Station 37. The Complex is powered by a 750kW natural gas-powered cogeneration unit which runs at approximately 500-550kW. Exhaust generated by the unit runs through a steam heat exchanger and the steam is then circulated through reheat coils in the City Hall building. All remaining steam is then used in the 260 ton absorption chiller. When the absorption chiller is unable to meet load a 400 ton back up chiller is used. A backup boiler is used when the steam heat exchanger is unable to provide enough heating and when the cogeneration unit is down for service.

The following table summarizes the demand for electricity and natural gas to power the Civic Center Complex and the water consumption of the Cogeneration unit.

	2004	2005	2006	2007	2008
Electricity (kWh)	2,048,112	1,616,231	588,191	758,473	888,010
Natural Gas (Therms)	197,238	278,681	382,091	398,885	401,009

In 2004 and 2005, the City required approximately double the amount of electricity than it consumed in 2008. This is due to the fact that the engine for the Cogen unit was being replaced in 2004, and in 2005, the City had to make additional repairs to the system.

In order to determine the CO<sub>2</sub> emissions attributed to the Civic Center complex, the City's electrical and natural gas usage was converted to metric tons of CO<sub>2</sub> based on factors provided by PG&E. However, it is not clear whether this is an appropriate measure of the CO<sub>2</sub> emissions for the Civic Center complex. The City is required to comply with an air quality permit that regulates the emissions of carbon monoxide, nitrogen oxide, ammonia, and precursor organic compounds. The City has installed an analytic converter on the Cogen unit and generates emissions at a much lower level than what is allowed under the permit. In its routine testing of emissions, City staff measures CO<sub>2</sub> emissions and is in the process of determining a methodology to compute the data from the measuring device to metric tons of CO<sub>2</sub>. This data is not currently available.

# City Facilities



As depicted in the figure below, from 2004 to 2008, CO<sub>2</sub> emissions from the Civic Center Complex ranged from a low of 1,692 (2004) to 2,661 (2008) metric tons. In 2004, approximately 71% of CO<sub>2</sub> emissions were due to natural gas and in 2008, approximately 92% of CO<sub>2</sub> emissions were due to natural gas.

Carbon Dioxide (Metric Tons) Emissions by Year  
Civic Center Complex

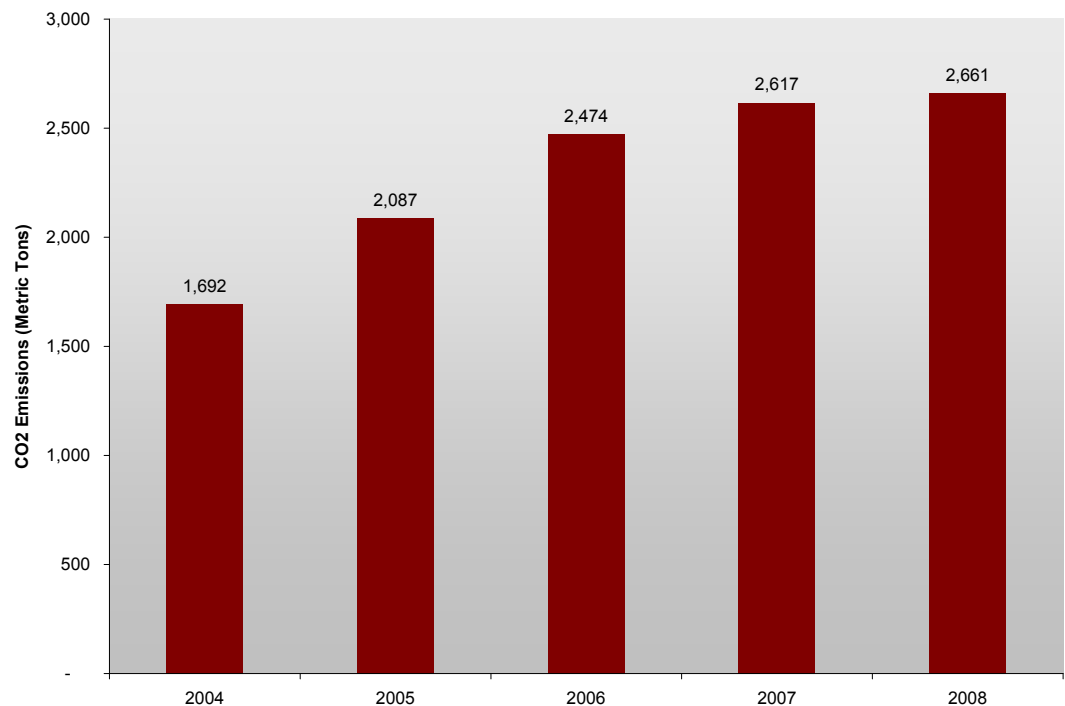


Figure 4-7

Over the years, the City has pursued a number of initiatives to reduce energy use at the Civic Center Complex. Some of these initiatives include:

- Installing motion sensors in many of the rooms in City Hall;
- Upgrading fluorescent lights;
- Installing software to automate controls of the cogeneration unit; and
- Installing a “white-roof” over half of the Police Department’s building.

# City Facilities

City staff have developed a list of additional projects to yield cost and energy savings. These projects include:

- Completing the “white-roof” project for the Police Department;
- Replacing air handlers;
- Replacing existing auxiliary boiler, which is more than 30 years old;
- Automating heating and cooling systems; and
- Purchasing and installing a steam boiler to limit use of the electric chiller.

Cost estimates and payback periods have not been developed for these projects; however, the City is working with PG&E to have an energy audit of the Civic Center Complex completed in 2009. The energy audit will consider the items above projects and others to generate a list of projects with cost estimates, energy savings, and potential rebates.

## Streetlights

CO<sub>2</sub> emissions from streetlights have been relatively constant over the past five years (2004 – 2009). From 2004 to 2008, CO<sub>2</sub> emissions from streetlights ranged from a low of 1,096 (2006) to a high of 1,182 (2007) metric tons. All of these emissions were generated from electricity.



# City Facilities

## Carbon Dioxide (Metric Tons) Emissions by Year Streetlights

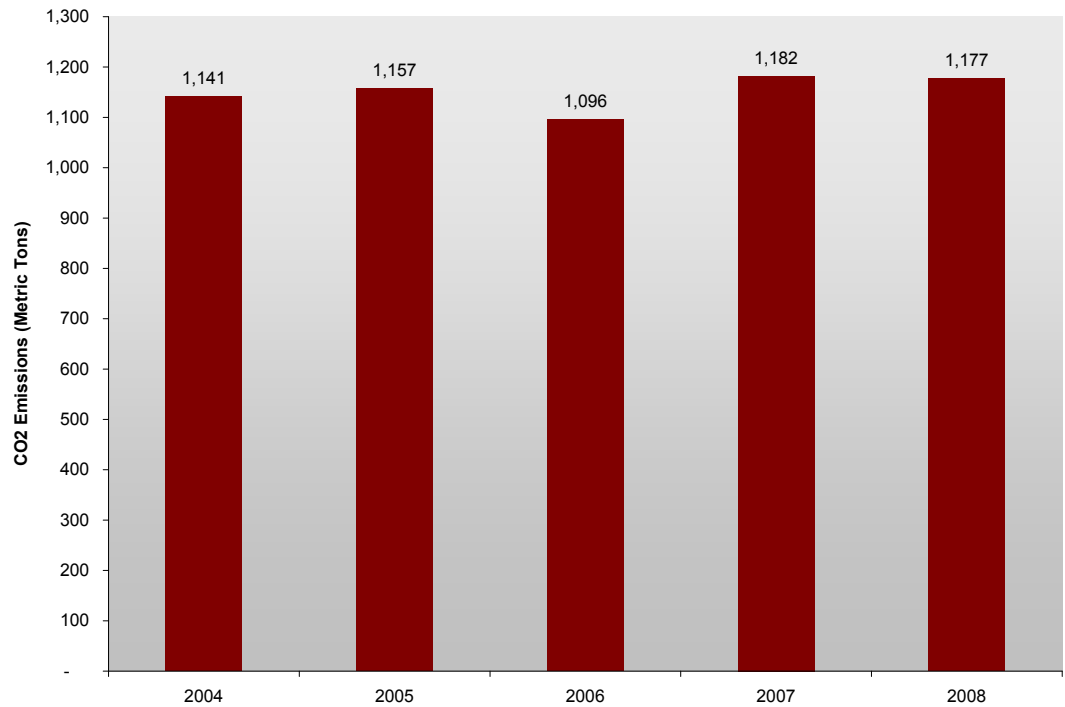


Figure 4-8

Chapter 7 provides more discussion on the City's streetlights and efforts to reduce electricity consumption and CO<sub>2</sub> emissions.



# Water Treatment Facilities

## Overview

The City operates two water treatment plants – Waterman Water Treatment Plant and North Bay Regional Water Treatment Plant – to provide water to more than 30,000 households and businesses. The Waterman facility is in the midst of a modernization project that will expand the capacity of the system from 16 million gallons per day (mgd) to 30 mgd. The North Bay facility, which is jointly owned by the City of Fairfield and the City of Vacaville, treats up to 40 mgd.

The City's extensive water system consists of 15 treated water pump stations with a total pumping capacity of over 30 mgd, 11 treated water reservoirs with a capacity of over 76 million gallons, and approximately 350 miles of pipelines.

Barring legislation or a statewide emergency declaration that supersedes the City's water rights, the City has secured sufficient water resources to support build out of the General Plan.





# Water Treatment Facilities

## Water Consumption

The figure below provides a historical overview of total water consumed by residents, businesses, and public agencies in the city of Fairfield. Between 1999 and 2008, 6,905 million gallons of water on average was consumed by Fairfield's residents and businesses, with a high of 7,342 million gallons of water consumed in 2003, and a low of 6,254 million gallons of water consumer in 2004.

Water Consumption (Million Gallons)

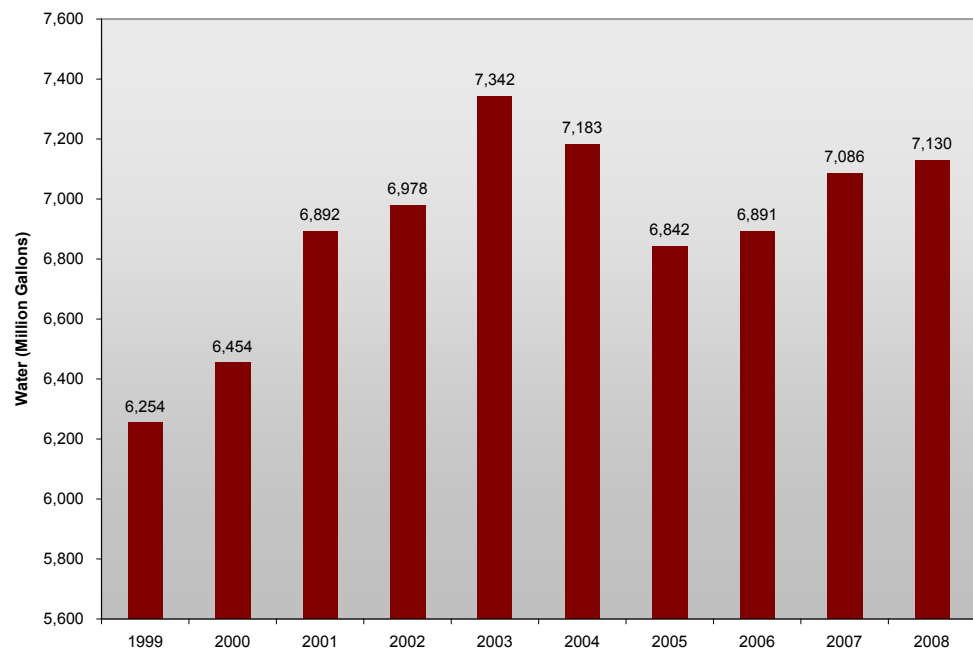


Figure 5-1

Treated water production at the water treatment plants will typically exceed potable water consumption due to “unaccounted for” water, typically between five and ten percent of production for a well-run system. The city’s unaccounted for water is within this range.

# Water Treatment Facilities

There are several factors that have contributed to the decline in the overall water consumption that the city has experienced since 2003 including:

- Accelerated voluntary water conservation efforts by citizens and businesses due to the statewide drought.
- Lower consumption by one of Fairfield's largest industrial customers, which has implemented a number of aggressive water conservation efforts.
- Slow down in economic activity due to the present recession.

Going forward, in the near term the City does not project substantial increases in water consumption. An emphasis on conservation will continue to result in lower consumption. In addition, the economic slowdown and limited development activity will constrain consumption.



# Water Treatment Facilities

## Energy Consumption and CO<sub>2</sub> Emissions

Chapter 3 demonstrated that the energy consumption of the City's two water treatment facilities and related transmission equipment resulted in the second highest level of CO<sub>2</sub> emissions among general City activities. In 2008, the CO<sub>2</sub> emissions from the water treatment facilities are estimated at 4,317 metric tons. From 2004 to 2008, CO<sub>2</sub> emissions from the water treatment facilities have steadily increased. This trend is attributed to the growth in both the residential and commercial sectors over this time period.

Water Treatment CO<sub>2</sub> Emissions (Metric Tons) 2004 - 2008

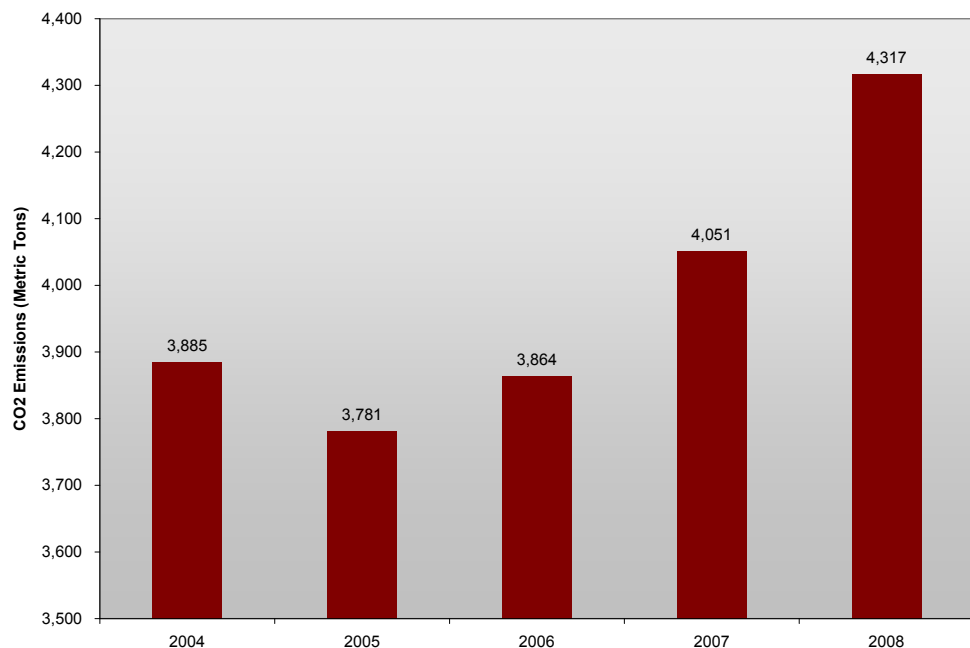


Figure 5-2

CO<sub>2</sub> emissions from the water treatment facilities are largely generated by electricity. From 2004 to 2008, on average, 95 percent of CO<sub>2</sub> emissions are attributable to electricity consumption. This trend is likely to remain unchanged for the foreseeable future unless alternative power sources such as solar or wind can be successfully tapped. The City is currently pursuing one such opportunity for the North Bay Regional Water Treatment Facility. The City is exploring the potential to install a one-MW solar array. The project has been stalled due to the discovery of endangered species, but the City hopes to successfully mitigate any environmental issues and complete the project in 2010.

# Water Treatment Facilities

## Water Conservation Efforts

The City has been running an aggressive water conservation program since 1991. The City's water conservation efforts are based on an established 14-point program. The practices are focused on stopping water waste, increasing water efficiency, changing water use practices and reporting conservation efforts in a standardized fashion. In addition, conservation efforts lead to energy and cost savings as they reduce the amount of power consumed to treat and deliver water. In this way, saving water simultaneously generates benefits for the earth and cost savings.

The table on the following page outlines the results of Fairfield's water conservation programs over the last ten years (1998 - 2008).





# Water Treatment Facilities

## Water Conservation Efforts by Best Management Practice 1998 - 2008

Best Management Practice	Result
Residential Water Surveys	3,308 surveys completed.
Residential Plumbing Retrofit Devices	11,961 plumbing retrofit devices installed.
System Water Audits, Leak Detection and Repair	Every year, water loss is below 10%; an active, ongoing leak detection program in place.
Metering with Commodity Rates for all New Connections and Retrofit of Existing	All connections are metered; all residential meters have been replaced with touch read meters over the past 10-year window.
Large Landscape Conservation Programs and Incentives	The City installed and expanded a centralized SMART irrigation system. Active management and budgeting have improved water efficiency.  Starting in 2009, water budgeting will expand to all large landscapes.
High-Efficiency Washing Machine Rebate Programs	In the past 2 years, the City provided rebates for 448 washing machines.
Public Information Programs	Annual outreach conducted through water bill inserts, brochures, participation in special events and community festivals, articles in the Fairfield Observer, radio advertisements, and "Water Quality Report".  Mobile display materials for major events and a permanent conservation display at Six Flags Marine World that is seen by 1,000,000 visitors each year.
School Education Programs	1,088 presentations delivered on water conservation to more than 28,000 students.
Conservation Programs for CII Accounts	The City and Solano County Water Agency support many commercial, institutional, and industrial programs such as High Efficiency Toilet rebates and direct installation, spray nozzle replacement, and SMART irrigation controllers.  Private efficiency measures saved 125 million gallons per year in the industrial sector.
Conservation Pricing	All water is charged by volume. In 2008, 71% of water revenues came from volume charges, which exceeds volume pricing requirements and Sierra Club recommendations.
Conservation Coordinator	Position created in 1992.
Water Waste Prohibition	Water waste prohibitions in City Code since the early 1990s.
Residential ULFT Replacement Programs	303 toilets replaced or rebated through a State-funded grant program.

Figure 5-3



# Water Treatment Facilities

The City of Fairfield will continue to implement water conservation programs in order to save water and preserve California's natural resources. Looking into the future, the State will likely focus on landscape irrigation efficiencies, improved information systems that can help users discover waste, and recovering "lost" water by finding and fixing leaks. In addition, the City is already investing in the next generation of meter reading technology, improvement of processes to deliver weather information to irrigation systems in our public and private landscapes, and encouragements to private business to be more efficient.

## Energy Efficiency Measures

The City has been proactive in pursuing energy efficiency measures at its two water treatment facilities. The following outlines some of the measures that have been pursued.

Measures implemented at the Waterman Treatment plant:

- All exterior plant lights are photocell controlled based upon sunrise/sunset time tables.
- Where practical and safe, motion sensors are used to control lights.
- Installed computerized irrigation system that monitors atmospheric condition to control frequency and duration of sprinkler operation.
- The large, south-facing windows in the upstairs offices are coated with shading film to reduce glare and air conditioning loads.



# Water Treatment Facilities

Measures implemented at the North Bay Regional Water Treatment plant:

- Downsized boiler and purchased an energy management system for HVAC.
- Converted one of three HVAC systems for ozone generators that will allow the use of ambient air when possible for cooling cabinet temperatures, instead of relying solely upon air conditioning units attached to each generator.
- Installed a heat-exchanger and blowers to minimize load on the chiller for cooling water for all three ozone generators.
- Windows and doors have sunscreens that reduce glare and provide for reduced air conditioning loads.
- Initiative to purchase energy efficient appliances.
- Replaced workstation monitors with more energy efficient LCD screens.



# Fleet

## Overview

This chapter provides an overview of the City's fleet and CO<sub>2</sub> emissions that arise from the consumption of diesel and unleaded gasoline. This data was gathered from internal resources. As discussed in Chapter 3, the City's fleet generates the highest level of CO<sub>2</sub> emissions accounting for approximately 39 percent (6,746 metric tons) of the City's estimated 16,500 metric tons of CO<sub>2</sub> annually. For discussion purposes, the City's fleet is divided into two categories – Non–Public Safety and Public Safety.

- **Non-Public Safety Fleet** - This fleet consists of light and heavy duty vehicles and heavy duty equipment that are owned by the following departments: Public Works, Finance, Community Resources and Community Development. The City's non-public safety fleet also includes the City's bus fleet, which provides local and regional public transit services along with a demand-responsive para-transit service for Fairfield's resident and businesses. Finally, the non-public safety fleet includes those vehicles and equipment that are integral to the operation of the City's two public golf courses.

All of these vehicles are maintained at the City's Corporation Yard located at 420 Gregory Lane. The Corporation Yard generated the fuel consumption data as the City fuels its own vehicles.

- **Public Safety Fleet** - The Public Safety Fleet consists of vehicles owned and operated by the Fire and Police Departments. Police and Fire maintain their own vehicles and are responsible for tracking fuel consumption. These vehicles are maintained at Fire Station 38 (1633 Union Avenue). Police fuel their own vehicles that require unleaded gasoline and obtain diesel fuel from Ramos Oil. Fire fuels its vehicles at Ramos Oil except for Station 39 (School District) and Station 35 (Flyers in Cordelia). Fire also uses commercial locations for Strike teams and or when Ramos is unavailable.

After providing a brief overview of the City's fleet, this chapter documents the City's fuel consumption and resulting CO<sub>2</sub> emissions. Finally, while the City has yet to develop a comprehensive strategy to reduce emissions from its fuel consumption, this chapter identifies opportunities for reductions that are worth considering.



# Fleet

## Non-Public Safety Fleet

The non-public safety fleet (Public Works, Community Resources, Community Development, and Finance) consists of a total of 165 light and heavy duty vehicles, 62 buses, and 181 pieces of heavy duty equipment such as tractors, lawn mowers, and other specialized equipment that consumes diesel or unleaded fuel. The majority of vehicles and equipment are owned by the Public Works Department. The table below provides an overview of the vehicles/equipment by department.

Department	Light Duty Vehicle	Heavy Duty Vehicle	Heavy Duty Equipment	Buses	Total
Public Works	98	34	172	59	363
Community Resources	19	0	9	3	31
Community Development	7	0	0	0	7
Finance	7	0	0	0	7
Total	131	34	181	62	408

In addition to the light and heavy duty vehicles and equipment, the City operates a fixed-route or local bus service and regional or intercity bus service (Fairfield and Suisun Transit, also referred to as FAST). Including spare buses, the FAST fleet consists of 59 buses available for operation within the Fairfield service area.

The service area for FAST stretches east to Sacramento and west to El Cerrito and Walnut Creek. In 2008, FAST recorded over 968,065 passengers. Other annual performance data include over 1,837,889 of miles in service and 94,913 of in service hours.

As of July 2008, FAST operates up to 42 vehicles during peak hours (approximately 6:30 a.m. and 5:30 p.m.). FAST also operates on Saturdays between approximately 8:57 a.m. and 4:40 p.m., and no service is provided on Sunday and major holidays at this time. The following are observed holidays:

- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Day
- New Year's Day
- Memorial Day

Fixed route service normally stays within the Fairfield/Suisun area while intercity routes usually service the freeway corridors of I-80, I-680, SR-4 and SR-24. In addition to the freeway corridors, transit vehicles have stops located in high traffic areas such as BART stations, malls, schools and other employment and retail centers. The basic fixed-route service operates between 6:00 a.m. and 7:00 p.m., Monday through Friday; and approximately 8:30 a.m. to 5:30 p.m., Saturday. No service is provided on Sunday or the major holidays.

Intercity operations are conducted by FAST in partnership with the Solano Transportation Authority. Operating hours are from 5:00 a.m. – 8:30 p.m., Monday through Friday and one route from Fairfield to Davis on Saturday from 8:00 a.m. – 4:30 p.m.

The City also operates a demand-responsive paratransit service within the cities of Fairfield and Suisun City. The service operates between 6:00 a.m. and 8:00 p.m., Monday through Friday; and approximately 8:00 a.m. to 6:30 p.m., Saturday. No service is provided on Sunday or the major holidays.





# Fleet

## Public Safety Fleet

### Police Department

As of May 2009, the Police Department owns and operates a total of 185 vehicles. The table below provides an overview of the type of vehicles owned by the Police Department.

Vehicle Type	Quantity
Light Duty Vehicles	
F-150 trucks	11
Parking Vehicles	2
Heavy Duty Vehicles	6
Motorcycles	7
Sedans	159
<b>Total number of vehicles</b>	<b>185</b>

### Fire Department

The Fire Department owns and operates a total of 34 vehicles. The table below outlines the different vehicle types owned by the Fire Department.

Vehicle Type	Quantity
Light Duty Vehicles	9
Heavy Duty Vehicles	13
Fire Trucks and Equipment	12
<b>Total number of vehicles</b>	<b>34</b>

## Fuel Consumption and CO<sub>2</sub> Emissions

Fuel consumption data was used to estimate the CO<sub>2</sub> emissions from the City's non-public safety and public safety fleet. According to the Air Resources Board, fuel consumption provides an adequate measure of CO<sub>2</sub> emissions. Fuel consumption data for non-public safety vehicles was provided by the Corporation Yard, while the Police and Fire Departments provided information for their own vehicles. The table below provides an overview of fuel consumption in 2008.

### Non-Public Safety and Public Safety Diesel and Unleaded Fuel Consumption (Gallons) – Calendar Year 2008

	Diesel	Unleaded	Total
Non-Public Safety	453,132	105,473	558,605
Public Safety			
Police	52	119,211	119,739
Fire	13,575	61,664	19,739
<b>Total</b>	<b>466,759</b>	<b>230,848</b>	<b>697,607</b>

Figure 6-1



# Fleet

Based on conversations with the California Air Resources Board, the most efficient method of deriving CO<sub>2</sub> emissions from vehicles is through fuel consumption<sup>1</sup>. Based on the data in the table above, the following chart depicts the City's CO<sub>2</sub> emissions in calendar year 2008.

Non-Public Safety and Public Safety Diesel and Unleaded Fuel CO<sub>2</sub> (Metric Tons) – Calendar Year 2008

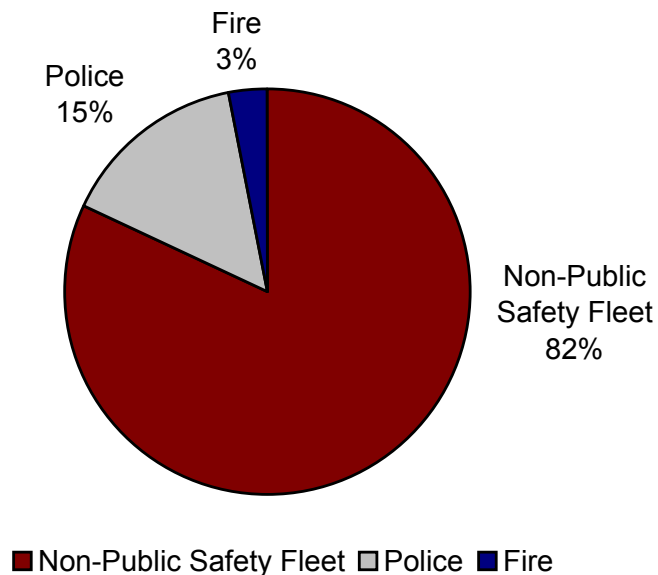


Figure 6-2

In 2008, the non-public safety fleet generated 82% of the City's CO<sub>2</sub> emissions from fuel consumption, whereas combined; Police and Fire generated 18% of the City's CO<sub>2</sub> emissions. The non-public safety fleet represents such a large portion of the City's total CO<sub>2</sub> emissions from fuel consumption because it includes the City's buses and other heavy duty equipment, which are inefficient vehicles.

<sup>1</sup> The California Air Resources Board, to convert diesel fuel to CO<sub>2</sub>, one metric ton of CO<sub>2</sub> equals 10.2 X (Gallons of Diesel Consumed/1,000). And to convert unleaded gasoline to CO<sub>2</sub>, one metric ton of CO<sub>2</sub> equals 8.6 X (Gallons of Unleaded gasoline consumed/1,000).

## Potential Initiatives to Reduce CO<sub>2</sub> Emissions

Given the level of emissions from the City's fleet, it is imperative that the City pursue efforts and adopt new technologies to reduce emissions.

The California Air Resources Board's "Fleet Rule" requires the City to reduce diesel particulate matter emissions from fleet vehicles beginning in 2007. The Fleet Rule applies to on-road, heavy-duty, diesel-fueled vehicles, like dump trucks and utility service trucks with gross vehicle weight rating greater than 14,000 pounds. Fire trucks and low usage vehicles are exempt from the regulations.

As of January 1, 2007, the City had a total of 40 vehicles that were required to comply with this regulation. Vehicles that are required to comply with this regulation must, 1) have their engines re-powered with 2007 compliant engines, 2) be retrofitted with the best available emission control technology, 3) be replaced with 2007 compliant vehicle models, 4) be labeled and used under the low usage agreement, 5) be scrapped and sold for scrap metal with destroyed engines, or 6) be sold for out of state use only. The first deadline was December 31, 2007, when at least eight vehicles (or 20%) had to be in compliance. The City achieved 12 vehicles (or 30%) compliance for 2007. The entire fleet must be in compliance by December 31, 2011, and the City is on target to meet the deadline.

Some additional opportunities to reduce the City's emissions are discussed below. This is a preliminary list. Over the next six to 12 months, staff will look at best practices and leveraging outside resources to develop a strategy to reduce fuel consumption. This will have the dual benefit of saving the City money and reducing its impact on the environment.

- Evaluate the potential for wide scale adoption of Networkfleet wireless management hardware/software system. Networkfleet reduces emissions by providing ongoing monitoring of vehicle conditions. The system notifies the City, as well as the California Air Resources Board, when there is an emissions problem so that the vehicle can be taken out of service until repaired. Fairfield is currently involved in a pilot project studying the City's street sweepers. Also, the City of Napa recently secured a grant to install Networkfleet on all light-duty city vehicles used by the police, fire, water, streets and community resources departments.



# Fleet

- Pursue grant opportunities to continue to acquire low or zero emission vehicles to reduce the City's fuel consumption. The City purchased seven (7) clean diesel buses in 2007 and three (3) clean diesel buses in 2009. The City also purchased its first diesel/electric hybrid bus in 2009. In addition, the City constantly monitors new technologies. The City of Santa Monica recently purchased a ZeroTruck, which is an all-electric, zero emission medium-duty truck. Also, Smith Electric Vehicles U.S. recently unveiled an all-electric utility truck with an aerial device (see below). PG&E will be testing this product and using it in performing routine and emergency overhead line work throughout northern and central California.

## Smith Electric All-Electric Utility Truck



Figure 6-3

Source: <http://www.government-fleet.com/News/Story/2009/06/PG-E-to-Test-First-SEV-All-Electric-Utility-Truck.aspx>

The Fire Department also plans to purchase smaller, or hybrid, vehicles (sedans, pick-up trucks, or small SUV's) for administrative staff personnel.

A cost estimate, payback period, and reduction in GHG emissions associated with the items above have not been developed. This effort will be undertaken as the City moves forward with the Municipal Sustainability Plan that is discussed in Chapter 11.





# Traffic Signals and Streetlights

## Overview

This chapter provides an overview of the electricity usage and resulting CO<sub>2</sub> emissions from the City's traffic signals and streetlights. Data for this chapter was gathered from internal resources and PG&E.

The City owns and maintains more than 8,200 street and pedestrian lights and 87 traffic signals. At build-out, the total number of street and pedestrian lights is expected to reach more than 10,000 and the number of traffic signals is expected to reach 135. Electricity is the sole source of power for these lights. As discussed in Chapter 3, in 2008, the City's street and pedestrian lights and traffic signals generated approximately seven percent, or 1,177 metric tons, of the City's total CO<sub>2</sub> emissions.

## Energy Consumption and CO<sub>2</sub> Emissions

Chapter 3 indicated that the energy consumption of the City's street and pedestrian lights and traffic signals resulted in the fourth highest level of CO<sub>2</sub> emissions. From 2004 to 2008, CO<sub>2</sub> emissions remained relatively flat. In 2004, CO<sub>2</sub> emissions from the City's street and pedestrian lights and traffic signals were 1,141 metric tons, only 36 metric tons less than in 2008. This trend is attributed to the limited growth in the number of lights relative to the City's sizable existing inventory.



# Traffic Signals and Streetlights

Carbon Dioxide (Metric Tons) Emissions By Year for Street and Pedestrian Lights and Traffic Signals

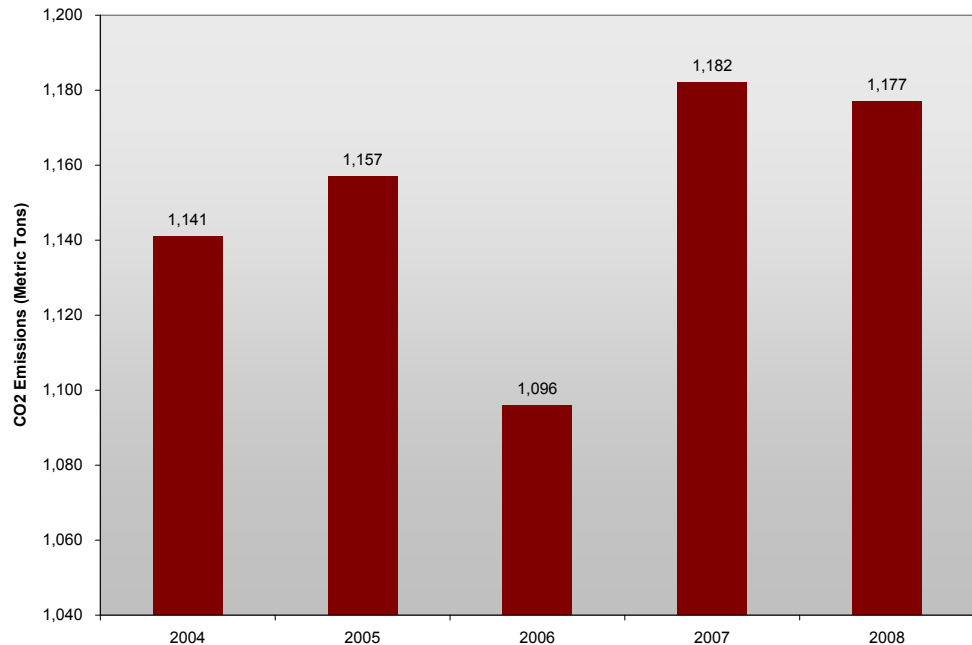


Figure 7-1

## LED and Induction Technology

The City's existing inventory of streetlights uses mostly high pressure sodium (HPS) with some mercury vapor lamps. The pedestrian indications for traffic signals use incandescent and neon lights. Both are an older technology that is quickly being surpassed by new technologies such as light emitting diodes (LED) and induction. The list of municipalities that are adopting this technology is constantly growing and includes the following:

- Los Angeles, CA announced in February 2009 a plan to convert 140,000 streetlights to LED.
- Martinez, CA announced that it will be using federal stimulus funds to convert 64 streetlights to LED.
- Palo Alto, CA announced in July 2009 that over the next five years it will replace some traditional streetlights with low-maintenance induction lamps and LEDs.
- San Jose, CA will convert 100 streetlights to LED and is seeking funds to convert its inventory of 25,000 streetlights to LED.

# Traffic Signals and Streetlights

- City of El Cerrito, CA. In June 2009, the City Council approved a plan to convert 240 streetlights along San Pablo Avenue to LEDs.
- City of Elk Grove, CA. In May 2009, the City Council approved the expenditure of grant funds to replace 350 HPS lamps with induction lamps.
- City of San Diego, CA. Twelve years ago, the City converted high pressure sodium lighting to induction lighting in a 16-block area surrounding the Gas Lamp District.

The City of Fairfield currently has its own pilot project ongoing. The City is currently piloting several different types of LED and induction lighting in the Woodcreek area.

The question is: Why are municipalities making the switch to LED and induction? The top reasons are:

- Cost savings
- Energy savings
- CO<sub>2</sub> reductions
- Better quality light
- Decreased maintenance and
- Life expectancy (5-year life for HPS versus 15 to 20-year life for LED/Induction).

Streetlights operate on the average 12 hours per day. Combined with traffic signals, they consume a significant amount of energy resources. As mentioned above, the City has over 8,200 streetlights consuming a budget of nearly \$600,000, with additional street lights installed every month. Energy cost and maintenance are expected to rise with the increase of streetlight fixtures. After revenue from various assessment districts is accounted for, the General Fund is responsible for this expenditure.

An analysis performed submitted to the City by PG&E and a pilot project consisting of retrofitting on converting 993 street and pedestrian lights with the potential to generate the following savings.

- Annual cost savings in excess of \$67,000
- Annual electricity savings of 461,000 kWh

The payback period for this project is estimated at ten years.



## Traffic Signals and Streetlights

In addition to these benefits, LEDs and induction produce a better quality light. The following photographs are from a PG&E case study analyzing the results of a pilot project in San Francisco. The results of this case study were published at the end of 2008.

41st Avenue, San Francisco, CA  
High Pressure Sodium (HPS)



Figure 7-2.1

41st Avenue, San Francisco, CA  
Light Emitting Diodes (LED)



Figure 7-2.2

42nd Avenue, San Francisco, CA  
High Pressure Sodium (HPS)



Figure 7-3.1

42nd Avenue, San Francisco, CA  
Light Emitting Diodes (LED)



Figure 7-3.2

Source: Pacific Gas and Electric Company, "Emerging Technologies Program, Application Assessment Report #0727, LED Street Lighting San Francisco, CA", Issued December 2008.

# Traffic Signals and Streetlights

## Programs and Practices for Future Consideration

The following outlines a series of opportunities for the City to reduce its emissions from streetlights and save money.

- Incorporate all LED traffic signal/pedestrian indications and streetlights at new or modified signal projects.

City special provisions for capital and development projects include red, yellow, and green LEDs for all signalized intersections in addition to pedestrian indications. Special provisions should be updated to reflect the new LED streetlight technologies that are available for new installations.

- Identify grant funding opportunities for Citywide LED or Induction streetlight conversion.

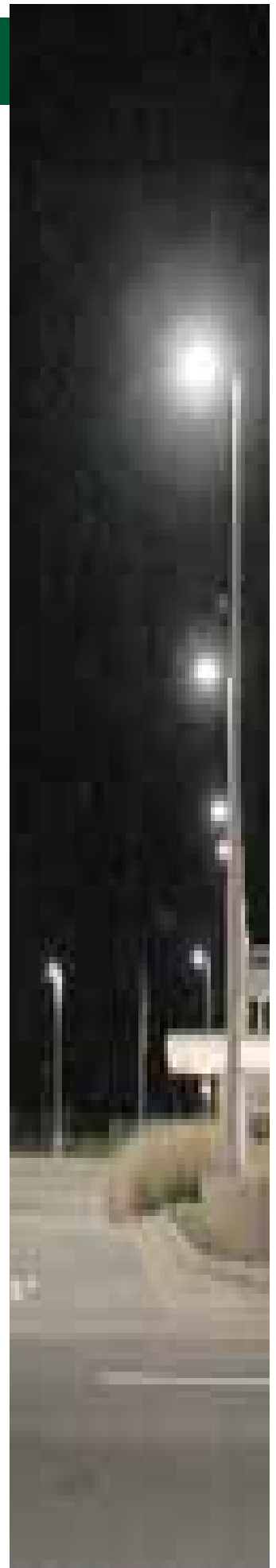
Current grant funding is available under the American Reinvestment and Recovery Act which has the potential to fund the retrofit of some of the City's existing inventory of street and pedestrian lights. The City is discussing the Clinton Climate Initiative with PG&E. Other consultants are pursuing funding mechanisms to retrofit the City's entire inventory of street and pedestrian lights.

- Upgrade all remaining traffic signals with yellow LED traffic signal indications to allow installation of battery back-up systems.

Converting to all LED, including yellows, has merit. Even though yellow indications are energized for a short amount of time, it is still cost effective to replace the incandescent lamps with LEDs from an ongoing maintenance perspective and the ability to utilize a battery back-up system. Converting entirely to LED also has the benefit of allowing the City to install battery back-up systems for its traffic signals.

The added safety benefits that come from installing LED traffic signal indications is the use of battery backup systems. Typically, traffic signals are dark during power outages. The California Vehicle Code states that drivers must treat a dark intersection as an all-way stop; however, few drivers adhere to this law and proceed through the intersection resulting in potentially serious conflicts.

Because the traffic signal indications use so little electricity, they can be equipped with batteries to keep them in operation for two to four hours in the event of a power outage. Eighty to ninety percent of the PG&E outages occur for less than 4 hours. This provides an added safety benefit to drivers that are unaware of the conditions. When the batteries begin to drain and there is only





## Traffic Signals and Streetlights

40% power remaining, the intersections are then switched to an all-red flashing mode which further extends the life of the batteries, in some cases up to 10 hours. Most of the intersections are equipped with a battery back-up system.

- Annually assess available streetlight LED retrofit kits, induction lighting, and full replacement streetlight LED fixtures for existing decorative lighting.

The LED streetlight retrofits and fixtures are continuing to evolve each year. Retrofit kits for decorative streetlights are in the early stages of development. Currently, replacing decorative fixtures with LED equivalents are costly and payback period is in the range of 15 to 20 years. Technology, engineering, and product reliability are expected to get better with the increase in demand. The City should annually evaluate the available product lines that involve modifications of the decorative streetlight line to stay ahead of the technology.

- Develop a recurring traffic signal program to periodically update coordinated signal timing throughout the City every five years.

By implementing coordinated signal timing on an arterial network, studies have shown that total fuel consumption can be reduced by nine to 13 percent, average fuel consumption declined by seven to 14 percent, average vehicle emissions decreased by nine to 13 percent. Coordinated signal timing on the arterial network can be reduce vehicular delay by 14 to 19 percent, decrease total stops by 11 to 16 percent, and increase average speed by seven to 17 percent.

Work with CalTrans at the interchanges to re-time signals along each of the corridors throughout the City. Untimed signals can result in wasted fuel, emissions, and time. A study has shown that re-timing signals every three to five years can provide as much as a 40 to 1 benefit to cost.



# Sustainable Development

## Overview

Sustainable development focuses on designing communities and buildings to reduce or eliminate the negative impacts they have on the human and natural environment.

A key environmental impact discussed throughout this report is GHG emissions. The State Air Resources Board (ARB) estimates that residential and commercial buildings directly account for 22% of the GHG emissions in California<sup>1</sup>. Much of emissions are related to the energy that buildings consume. Beyond this direct impact, buildings contribute indirectly to an even larger share of GHG emissions, as the patterns in which buildings and land uses are arranged play a large part in the amount of vehicle trips that they generate.

ARB estimates that vehicle trips contribute an additional 36% of the state's GHG emissions. Clearly, then, the ways in which buildings are constructed and the patterns in which they are built, have a significant effect on GHG emissions. Beyond GHG and energy issues, other topics that fall under the heading of "sustainable development" include water usage, water quality, and various solid waste streams.

Fairfield has a strong planning and regulatory foundation for a sustainable development program. Following is a list of various policies and regulations already in place that are not discussed in other parts of this report and a discussion of some other City-sponsored efforts that promote sustainable development.

<sup>1</sup> Climate Change Proposed Scoping Plan, California Air Resources Board, October 2008, p 13.





# Sustainable Development

## Policies and Regulations

### 2002 General Plan

The General Plan is the City's vision for the future of the City in 2020. Adopted in 2002, the 2002 General Plan proposes a “Livable City” concept that promotes sustainable development. The General Plan envisions the city developing in a manner that promotes a more compact and efficient land use pattern than in the past, and places less emphasis on development that necessitates use of the automobile. In particular, the General Plan's Land Use Element promotes the following sustainable concepts:

- Fairfield will remain an important center in Solano County for government, business, and commerce. The downtown area will become a stronger center for the entire city.
- There will be a strong commitment toward protection of agricultural areas outside the Urban Limit Line and to the separation from other urban areas in the County.
- Future development will largely occur within the existing city limits. Limited development will be proposed outside the city limits, primarily to achieve certain related objectives that are difficult to achieve within the existing city limits.
- The City will provide incentives for concentrated development of infill areas within the existing City boundaries. These incentives will include modifications to development regulations and city fees.
- There will be a greater emphasis than in the past on pedestrian-oriented development (POD) and transit-oriented development (TOD).
- The existing separation of the western, central and eastern areas of the city will become more connected, with emphasis on a common city identity, and citywide diversity in development. However, areas that will remain remote from central Fairfield and downtown, such as Cordelia, would have high quality governmental services, recreation, shopping and employment.
- There will be a citywide balance of jobs and housing, with an emphasis on diversity in jobs and housing options. The desired citywide ratio should be consistent with the desired overall ratio for the nine-county Bay Area, established by recent policy decisions of the Association of Bay Area Governments.
- The General Plan includes numerous other policies that have not been addressed in this chapter that promotes these concepts.



# Sustainable Development

## Zoning Ordinance

The City's Zoning Ordinance is a broad set of development regulations intended to implement the General Plan vision described above. Key to achieving this vision is regulations that promote efficient land use. Beginning with its adoption in 1999, and with subsequent amendments, the Zoning Ordinance has promoted development with increased landscaping and tree coverage, reduced parking requirements where appropriate, and reduced building setbacks. A key component of the City's Zoning Ordinance is special regulations to promote effective small-lot single and multifamily development. Other regulations in the Zoning Ordinance require the preservation of native tree species such as the many oaks that dot the city's hillsides and valleys.

## Water Efficient Landscape Ordinance

Achieving water use efficiency is a key focus of sustainable development. Reducing water usage maximizes the amount of development the City can allow. It also reduces the amount of energy needed to pump potable water through the city. Watering of landscaping is a major source of water demand in the city. The City has adopted an ordinance (Chapter 22A of the City Code) to ensure that landscaping uses water efficiently. Specifically, the ordinance requires that developers document the projected water use for their landscape programs, and that they achieve set standards for efficient use. To avoid unnecessary runoff, overhead spray irrigation is prohibited on slopes greater than 25%.

## Other City Sponsored Sustainability Efforts

### Fairfield Transportation Center / City Park and Ride Lots

An important aspect of sustainable development is minimizing automobile use. A sustainable land use pattern cannot eliminate the desire or demand for residents to work outside the city. However, there are numerous residents that commute to areas that are well-served by BART or ferry. For these residents, the City offers bus service from the Fairfield Transportation Center to the Vallejo ferry and the El Cerrito Del Norte BART station. For other residents, carpooling is a good option. The City offers a park and ride option at the Fairfield Transportation Center and is developing plans for a park and ride lot on land acquired by the City off of Red Top Road (across from Sunnyside Dairy).

In addition to the above items, two ongoing planning efforts are underway to promote sustainable development patterns in the city. These include the "80 to 80" project and the Train Station Specific Plan.



# Sustainable Development

## 80 To 80 Corridor Revitalization Plan

The 80 to 80 Corridor Revitalization Plan is a focused action plan that reshapes the commercial character of the West Texas-Texas-North Texas Street corridor. A draft plan has been developed that envisions the following:

- **West Texas Street.** The one mile segment of West Texas Street from Beck Avenue to Pennsylvania Avenue is transformed from a struggling commercial corridor consisting of larger retail stores and auto-oriented service businesses to a mixed-use, primarily residential, corridor. The figures below illustrates the type of mixed-use development envisioned for West Texas Street.

Illustrative Townhome Development at  
Manassas Park Station, Manassas, VA



Figure 7-1.1

Illustrative Compatible Corridor  
Residential Development



Figure 7-1.2

Source: 80 to 80 Corridor Revitalization Plan, Public Review Draft, August 2008.

- **Texas Street (Downtown).** The plan envisions a downtown in which retail development is consolidated in the three blocks that span from Texas Street and Jefferson Street to Texas Street and Madison Street – the 700, 800, and 900 blocks of Texas Street. In the remaining three blocks of downtown, infill development is anticipated to add additional residential and commercial development.



# Sustainable Development

- **North Texas Street.** The North Texas Street Corridor, given its length, is divided into four sections. The first section, from Clay Street to East Tabor Avenue, maintains a commercial focus and will be a prioritized location for automotive services and related businesses relocating from West Texas Street to facilitate the transformation of that portion of the Corridor. The second section, from East Tabor Avenue to Hawthorn Drive is envisioned to consist of areas of infill (mixed-use) development and commercial development. The third section, from Hawthorn Drive to the South Putah Canal is a successful residential area that is anticipated to remain that way. Finally, the fourth section, from the canal to I-80, consists of retail development that is expected to grow over time as the vacant land in the area is developed.

Given the economic slowdown, implementing this plan will be a challenge. While certain initiatives (e.g. Downtown Façade Program) outlined in the revitalization plan have already been pursued, it will be many years before the full vision is realized.

## Fairfield Vacaville Train Station and the Train Station Specific Plan

As noted above, reducing automobile use is a major focus of sustainable development. Fairfield residents commuting to central employment centers in the Bay Area and Sacramento are fortunate that Fairfield is located along the Capitol Corridor Rail line. Currently operating 16 round trips a day, the Capitol Corridor provides commuter rail service from a station in Suisun City that is directly adjacent to downtown Fairfield. The Capitol Corridor has authorized the City to build a second station in northeast Fairfield to serve eastern parts of the City and residents in Vacaville. The City has acquired a station site at the southeast corner of Vanden Road and Peabody Road for the station, and is currently designing the station. It is scheduled to open in 2014. The station presents a huge opportunity for future sustainable development nearby.

The City is currently preparing a Specific Plan for land around the station to ensure that a large number of future residents can walk to the station. Consistent with commuter rail policies established by the Metropolitan Transportation Commission, the plan will seek to promote a minimum of 2,200 housing units within one-half mile (approximately a ten-minute walk) from the station. The plan is expected to be completed by 2011.





## Sustainable Development

### Programs and Practices for Future Consideration

#### Green City Building Policy

There are cities and counties throughout the region and state that require municipal retrofit or new construction projects to adhere to certain sustainable building practices. The most common set of guidelines is referred to as the “Leadership in Energy and Environmental Design” (LEED) program. LEED is a nation-wide program of the US Green Building Council that establishes green building standards and certification. LEED offers various levels of certification for both new construction and retrofit projects. The City could require that its projects meet a certain level of LEED certification. Examples of actions taken by surrounding jurisdictions are summarized below:

- Solano County achieved a LEED certification at the bronze level for the Solano County Government Center.
- Berkeley requires municipal buildings to be LEED certified at the Silver Level.
- San Rafael requires municipal buildings to be LEED certified and certified at the Silver Level if over 30,000 sq. ft.
- Rohnert Park requires municipal buildings to be LEED certified at the Silver Level.

#### Green Building Ordinance

Currently, the City’s building code requires that construction projects comply with the State’s energy efficient building standards. These standards require installation of energy efficient devices including lighting, heating, air-conditioning, plumbing, insulation, windows and doors. These standards, however, are not the highest possible, and various other opportunities exist to improve construction energy efficiencies. Numerous communities in California have adopted a Green Building Ordinance that mandates higher energy efficiency than state law, or mandates use of other energy saving means such as alternative energy production, passive solar cooling, cooler roof materials, etc.

The California Attorney General’s Office maintains a list of communities that have adopted a Green Building Ordinance. The list was last updated in December 2008. At that time, 27 communities are listed as having adopted a Green Building Ordinance.

The most common system adopted by municipalities is the LEED guidelines devel-

# Sustainable Development

oped by the United States Green Building Council. LEED has developed several rating systems with guidelines for different construction markets, including new nonresidential buildings, core and shell construction of commercial buildings, construction of commercial interiors, the construction of schools, health care facilities, and retail spaces, and a newly-developed system for homes (LEED-H), released in January of 2008. While the far majority of local ordinances require or permit the use of LEED ratings for public and commercial projects, most local ordinances rely on a set of guidelines promoted by Build-It-Green for residential construction.

As discussed in Chapter 11, over the next twelve to 18 months, the City intends to work with the business and development community to implement a set of guidelines for Fairfield. The City envisions initially starting with a voluntary program and transitioning to a mandatory program over time. Ultimately, Fairfield plans to coordinate its efforts with other communities in Solano County to ensure consistency across jurisdictions.

## Climate Action Plan

In response to AB 32, a number of communities have adopted or are in the process of developing Climate Action Plans (“CAP”). A CAP is a comprehensive community plan to achieving a community wide reduction in GHG emissions. Developing a CAP requires participation from the entire community.

Communities that have most recently completed CAP’s include Hayward and Martinez. Within Solano County, Benicia is the only jurisdiction to have launched the CAP process. Information on their effort can be found at: [www.beniciacclimateactionplan.com/files/about.html](http://www.beniciacclimateactionplan.com/files/about.html).

Prior to commencing work on a CAP for Fairfield, the City needs to document its GHG emissions and establish achievable community targets. As discussed in Chapter 11, regarding implementation and next steps over the next twelve months, the City intends to build on the work in this report and perform a comprehensive emissions inventory, develop achievable GHG emissions targets, and identify the funding sources to commence work on a CAP.





# Solid Waste and Recycling

## Overview

The California Integrated Waste Management Act of 1989 (AB 939) mandated that each city and county in the State of California develop a Source Reduction and Recycling Element (SRRE) for inclusion in the County Integrated Waste Management Plan. This SRRE was prepared for the City of Fairfield in accordance with California Integrated Waste Management Board (CIWMB) regulations by a team of consultants including 3E Engineering, Environmental Consulting and Technology, and Gainer and Associates. In December 1991, the City of Fairfield adopted the Final Draft Source Reduction and Recycling Element (SRRE) and Household Hazardous Waste Element (HHWE) by Resolution No. 91-322.

AB 939 also made all California cities, counties, and CIWMB-approved regional solid waste management agencies responsible for implementing programs to divert 25 percent of their solid waste by 1995 and 50 percent by year 2000 in order to reduce waste going into landfills. Later legislation mandated that a 50 percent diversion requirement be achieved every year.

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Residents and businesses have myriad waste collection programs that support disposal of recyclables, non-recyclables, green, solid, and construction and demolition waste.

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# Solid Waste and Recycling

The figure below provides a historical overview of the total amount of solid waste, recycling, and green waste generated in the city of Fairfield from 2003 through 2007.

Total Amount of Solid Waste, Recycling, and Green Waste

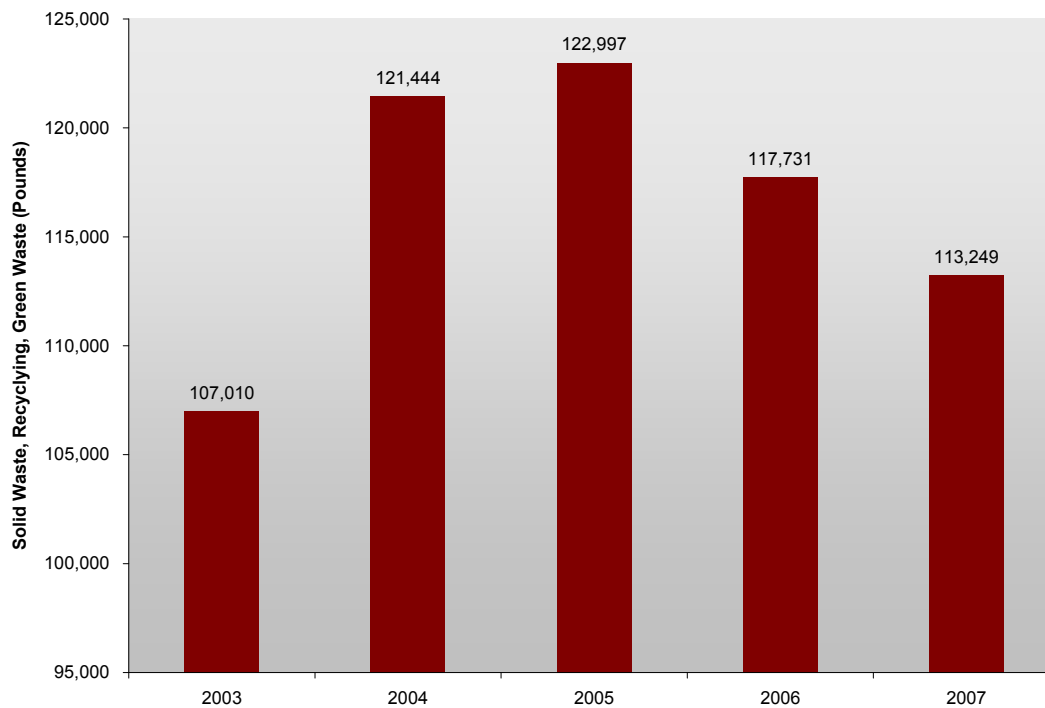


Figure 9-1







## Solid Waste and Recycling

### Existing City Policies and Programs

Chapter 9 of the Fairfield Municipal Code sets the City's policies regarding Solid Waste and Recyclables Collection Services in the city of Fairfield. There are several waste collection programs available to residents of Fairfield, including convenient, curbside collection of both recyclable and non-recyclable waste, green waste and solid waste; recycling containers placed in City special events downtown and in City parks and golf courses; and construction and demolition waste hauling. The City currently has a franchise agreement with Solano Garbage Company for exclusive hauling of solid waste, recyclables and green waste. Solano Garbage Company also operates the "Solano Recycles" facility at 2901 Industrial Court in Fairfield. This facility offers residents household hazardous waste collection, BOPA (batteries, oils, paints and antifreeze) collection and a buy-back center for residents to take recyclables.

#### Residential Waste Collection

Residents are provided with three carts in which to put their waste: A green waste cart for green waste and compost materials, a blue recycling cart for waste that can be recycled and a gray garbage cart for all other small solid waste items. Residents are given two free bulky waste pickups per year in order to remove large waste items such as appliances and furniture. Other free services offered to residents include one free extra garbage pickup per year, and one free landfill coupon per household that allows for disposal of up to two cubic yards of solid waste and one bulky waste item at Potrero Hills Landfill. Each household is also allowed to use their green waste cart to dispose of garbage on their first regular pickup day after Christmas. Discounted services for low income residents are also given.

#### Commercial Waste Collection

Commercial garbage collection is provided by Solano Garbage Company and is tailored to the needs of each commercial customer.

# Solid Waste and Recycling

## Recycling Diversion

The City's recycling efforts are comprehensive and include residential curbside recycling, commercial recycling, green waste collection, household hazardous waste collection, construction and demolition waste management and educational outreach efforts. Since AB 939 was passed, the city of Fairfield has substantially increased its diversion rate. The city did not meet diversion requirements in 1995 or 2000 but the diversion rates were very close with 22% diversion in 1995 and 46% in 2000. In 2003, the city achieved a 65% diversion rate and has continued to meet its diversion rates ever since.

## Household Hazardous Waste and BOPA Collection

Solano Recycles operates Household Hazardous Waste and BOPA (batteries, oils, paints and antifreeze) collection facilities that accept hazardous waste items that cannot be put in the residential collection carts. Both facilities are located at 2901 Industrial Court in Fairfield. Household Hazardous Waste and BOPA collection is free of charge to all Fairfield and Travis Air Force Base residents.

The Household Hazardous Waste collection facility is open the 2nd and 4th Saturday of each month from 9 AM to 2 PM. Collection is by appointment only and proof of residency is required. The BOPA facility is open Monday-Friday, 9 AM – 4 PM and Saturday 8 AM – 2 PM.

## Used Oil Collection

Residents wishing to dispose of used oil have two options in which to do so. The first is a Curbside Used Oil Collection Program offered by Solano Garbage Company. Residents can place their used motor oil at the curb next to their carts on their regular garbage collection day, as long as it is in a specifically designated recycling container provided by Solano Garbage Company. No other containers are accepted. The containers are picked up by Solano Garbage Company for recycling. Once the container is picked up, it is replaced with a clean one.

The second option to dispose of used oil is to take the used oil to a Certified Used Oil Collection Site. There are currently eight (8) businesses in Fairfield that have been certified to accept used oil for recycling purposes. A few of these sites also accept used oil filters as well. A listing of these sites can be found on the City's website at [www.ci.fairfield.ca.us](http://www.ci.fairfield.ca.us) or on the Solano County Recycling Guide at [www.recycle-guide.com](http://www.recycle-guide.com).





## Solid Waste and Recycling

### Medical Waste

Residents that dispose of residential medical waste must remove any residual fluids, bag and tie the tubing and other non-needle waste and then place the waste in the gray garbage cart. Needle waste cannot be disposed of in any cart; however needle waste is accepted at a few locations around the city. These locations can be found on the City's website at [www.ci.fairfield.ca.us](http://www.ci.fairfield.ca.us).

### Used Tire Collection

The City of Fairfield joined with other cities and Solano County to apply for a Used Tire grant from the CIWMB that provides reimbursement for the collection of used tires. Used tire collection events, or Tire Amnesty Days, will be scheduled for each City that participated in the grant application. Residents will be able to bring their used tires to the event to be recycled.

### Construction and Demolition Waste Collection

Senate Bill 1374 directed the CIWMB to provide information to jurisdictions and general contractors on methods and activities to divert construction and demolition (C&D) materials. This bill also directed the CIWMB to develop and adopt a model C&D diversion ordinance for voluntary use by local jurisdictions. The City of Fairfield adopted Ordinance 2006-04 establishing policies relating to C&D hauling and diversion within city limits. The City requires C&D haulers to have an approved collection agreement in place to ensure that 50% of this type of waste is being diverted from the landfill.

### Parks and Special Events Recycling Program

Using funding provided by a grant from the California Department of Conservation, the City has contracted with a local Boy Scout troop to provide collection of recyclable beverage containers in City parks and golf courses. This Parks Recycling Program helps keep recycling efforts going at local parks and also teaches the participating boy scouts the value of recycling.

The same grant is also used to contract with Mission Solano, a transitional shelter, for recycling services at special events around the city. Mission Solano is responsible for making sure that recycling containers are placed around the event for the public so that efforts to recycle can be maximized. Mission Solano provides these services for the following special events: Coast and Creek Cleanup, Earth Day, Independence Day Parade, Tomato Festival, Candy Festival and the Veterans Day Parade.

# Solid Waste and Recycling

## Education Events and Efforts

A part-time staff person, hired as the City's Recycling Coordinator, is assigned to manage the City's recycling efforts. This position is funded in part by grants from the California Integrated Waste Management Board and the California Department of Conservation. The Recycling Coordinator is housed in the City Manager's Office and works under the supervision of the Management Analyst.

The Recycling Coordinator participates in many large special events around the city to provide recycling education materials to the public. In addition to the education materials, the Recycling Coordinator provides free items to the adult public such as biodegradable funnels for changing oil and reusable shopping bags. Items available for children include recycled content pencils, activity books, and also biodegradable Frisbees.

Other educational outreach areas include sponsorship of the Lake Berryessa Summer Water Quality Protection Outreach Program and also the Lake Berryessa Boater Outreach Program. These programs provide materials and personnel to teach residents, using Lake Berryessa, about keeping solid wastes out of the lake. The programs also provide boaters with educational materials and freebies to promote bilge pad recycling.

## Programs and Practices for Future Consideration

The City is currently working on two important changes that will help strengthen the City's waste diversion efforts. The first change will be to strengthen oversight and enforcement of Construction and Demolition Waste (C&D) haulers. Changes to requirements for construction projects are also in progress. Contractors will be required to complete a "Construction and Demolition Checklist" with their bid package for City projects so that the City can determine the type and quantity of C&D materials that will be generated at a construction site. These contractors will be required to employ a City-approved hauler that must divert 50% of all C&D Waste generated by the project. The contractor will also be required to submit a final report once the project is complete to ensure the 50% diversion requirement.

The second change will be increasing recycling and reducing waste at City facilities and projects. A recycling survey was created and is being administered to departments within City Hall in order to provide feedback that will be used to create an educational campaign, document waste streams and increase the availability of recycling receptacles. These efforts will expand to City buildings off site of City Hall in the near future.







# Purchasing Policy

## Overview

Chapter 400 of the City of Fairfield's Administrative Policy has guidelines for the procurement of supplies and professional and other services. Within Chapter 400, Section 6 consists of the City's Recycled Products Purchasing Policy. The City's policy encourages the acquisition and use of recycled products and provides a listing of various products that presumably should consist of some amount of recycled content or be reused.

## City Purchases

The City does not formally track all of its purchases in a manner sufficient to determine the extent to which recycled vs. non-recycled products are used. However, through Office Depot, the City is able to demonstrate for office supplies, the amount of recycled vs. non-recycled items. This data is only available for 2008 and is summarized in the table below.

Total Number of Office Supplies Purchased	14,983
Number of Recycled Items	4,783
Recycled Items As a % of Total	32%

Source: Office Depot

## Recycled Office Supplies Purchased in 2008

Office Depot also provides information on the economic benefit associated with the City's purchase of recycled products. In 2008, the City purchased 346 lbs. of paper, of which 111 lbs. consisted of post consumer recycled content. Through the purchase of recycled paper, the following environmental benefits were achieved:

- GHG emissions reduction of 117 lbs.;
- Approximately 486 gallons of water saved;
- 1.3 trees saved; and
- 6.7 gallons of oil saved.



## Environmentally Preferable Purchasing Policy

While it is important to consider the recycled content of products, it is also important to look at other environmental attributes such as energy consumption, toxicity, air and water pollution impact, materials efficiency (such as packaging), and the disposal impact at the end of its useful life. A growing number of public and private entities have adopted what is commonly referred to as Environmentally Preferable Purchasing Policies that establish guidelines that go beyond recycling. The City will research what other communities are doing in this regard and develop a recommendation appropriate for Fairfield. Examples of communities that have adopted Environmentally Preferable Purchasing policies include Berkeley, San Francisco, San Leandro, and Dublin. Attachment B is Stopwaste.org's model policy.

In addition to developing a comprehensive policy, the ability to track City purchases needs to be strengthened in order to enforce the policy. In addition, through improved tracking, the City's accomplishments and benefits to the environment can be communicated both internally and to the community.





# Next Steps

## Overview

This report began with an overview of the causes and conditions of global climate change. There is a scientific consensus that rising levels of GHG emissions, typically measured in carbon dioxide (CO<sub>2</sub>) or equivalents, are contributing to a climate change that threatens health and welfare. The following reiterates some of the outcomes of these rising levels of GHG:

- Increases in harmful air emissions.
- Increases in sea levels that will result in the erosion of beaches, bay shores, river deltas, marshes and wetlands and increased salinity of estuaries, marshes, rivers and aquifers. This increased salinity has the potential to damage or destroy crops in low-lying farmlands.
- Dwindling water supplies as seasonal storage in snow and ice disappears.
- Agricultural production may increase with slight warming, but will decrease thereafter due to changes in precipitation, weather extremes, and the spread of crop pests and diseases.

Concerns over the impacts of climate change have spurred communities throughout the San Francisco Bay Area into action. Communities have invested resources in efforts to document their GHG emissions levels, committed to GHG emissions reduction targets, and developed strategies to meet these targets. Many private companies have done the same. At the state level, concerns over climate change culminated in the adoption of AB32, which commits the state to strict reductions in GHG emissions by 2020 and 2050. While this legislation has not resulted in specific mandates at the local level, there is a general consensus that it is only a matter of time. To this end, the City formed a Green Team to document the City's impact on the environment, what actions have been taken to date, and provided an overview of what the City can do to promote a more sustainable lifestyle and be prepared to respond to future mandates. Earlier chapters in this report summarize this effort, as well as programs and policies that have potential to reduce the City's GHG emissions.

The remainder of this chapter is about the future. This chapter discusses actions that the City Council can take to build a long-term commitment to sustainability and spur the organization and community into action. In addition, this chapter outlines how the City Manager's Office will lead an interdepartmental effort to craft and implement a long-term strategy that achieves tangible cost and energy savings and increasing use of renewable sources of energy such as solar and wind. Through effective marketing of this effort, the City aspires to cultivate widespread action.

## Focusing the Organization on Sustainability

The City Manager's Office will be responsible for implementation and coordinating the City's Sustainability Initiative. This will include providing overall leadership and program management. Given the interdisciplinary nature of this initiative, a focused "Green Team" consisting of staff from departments throughout the City will continue to meet on a regular basis to develop ideas and accelerate implementation. The following organization chart depicts how the City will be focused on this initiative.

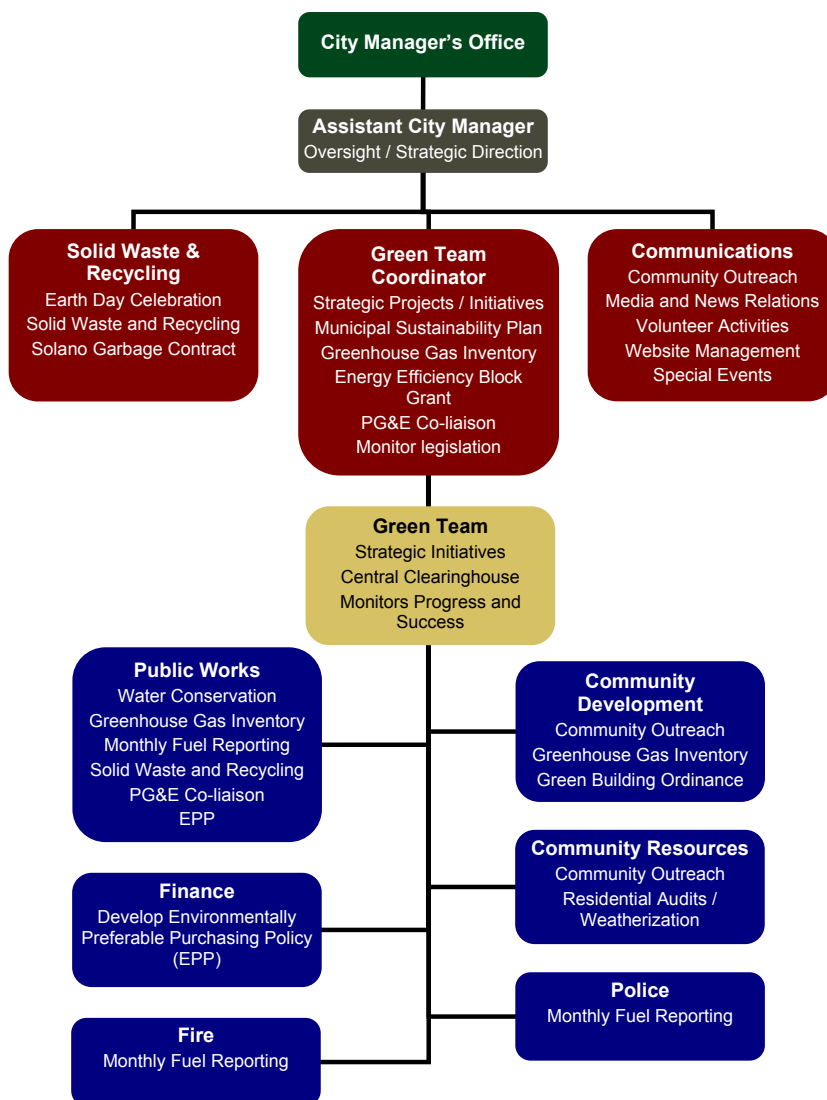


Figure 11-1

As the Sustainability Initiative is implemented, the City Manager's Office will consider alternative organization structures such as establishing a formal division or "office" of sustainability.

# Next Steps

## Looking Ahead

The City's approach is focused on actions that demonstrate leadership – in order to “talk the talk” we need to “walk the walk”. To this end, the Green Team has assembled a series of implementation items to pursue over the next six, twelve (12), and eighteen (18) months. These items are building blocks to the development of a long-term sustainability strategy for the City to execute. The long-term strategy will consist of energy efficiency measures, opportunities to leverage renewable (solar and wind) energy sources, sustainable purchasing policies as well as strategies to reduce the City's water usage, fuel usage, and generation of solid waste. As the strategy unfolds over time, the City will track its progress and convey its successes to the community. Over time, community outreach will become a more integral component of the City's efforts to generate and support community initiatives by the private sector and other governmental entities.

Attachment C is a detailed implementation plan and timeline to launch the City's commitment to the pursuit of a more sustainable future. The action items outlined in the timeline are divided into the following categories:

- Establishing a Commitment to Sustainability;
- Developing a Long-Term Strategy; and
- Leveraging partnerships and funding opportunities to generate cost savings, energy savings, and reduction in GHG emissions.

The remainder of this section will discuss some of the key items under these categories.

### Establishing a Commitment to Sustainability

In order for City Council to lead, it needs to establish a policy direction. The following lists some of the items that will be before City Council to accomplish this goal:

- Action Item – Adopt the US Mayors Climate Action Agreement (Attachment D).

This initiative, which was launched in 2005, has received the support of more than 900 mayors. Cities that participate in the US Mayors Climate Action Agreement make the following commitment:

- Strive to meet or beat the Kyoto Protocol targets in their own communities,

## Next Steps

through actions ranging from anti-sprawl land-use policies to urban forest restoration projects to public information campaigns;

- Urge their state governments and the federal government, to enact policies and programs to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol -- 7% reduction from 1990 levels by 2012; and
- Urge the U.S. Congress to pass the bipartisan greenhouse gas reduction legislation, which would establish a national emission trading system

This item will be brought before City Council in a resolution as soon as possible. This action will not require the expenditure of any funds.

### ■ Action Item – Join Tree City USA.

The City learned about Tree City USA from PG&E. Based on a preliminary review of membership criteria, Fairfield qualifies. Tree City USA is sponsored by the Arbor Day Foundation in cooperation with the USDA Forest Service and the National Association of State Foresters. Tree City USA provides direction, technical assistance, public attention, and national recognition for urban and community forestry programs in cities throughout America. Locally, both Benicia and Vallejo have joined Tree City USA. There are no additional costs to join Tree City USA; however, in order to become a member, the City needs to complete an application, obtain a proclamation from the Mayor, and host a tree celebration event. The tree celebration event for 2009 will be part of the Tomato Festival in which the Green Team will have a presence.

### ■ Action Item – Join California Product Stewardship Council

The California Product Stewardship Council (CPSC) is a coalition of local governments, businesses, and individuals across California that support product stewardship or extended producer responsibility (EPR). As discussed earlier in this report, AB 939 requires local governments to achieve a waste diversion rate of 50 percent by 2000. However, recycling programs have not necessarily succeeded in reducing the amount of waste generated or sent to landfills and the costs of managing waste far outstrip their budgets. To this end, product stewardship aims to reduce waste at the source by encouraging better product and packaging design. Solano County, Vacaville, Rio Vista, and Dixon have all adopted resolutions affirming their support and joining CPSC. There is no cost to join CPSC and Fairfield benefits through access to free resources for education campaigns and training.

### ■ Action Item – Adopt Green Building Policies.







## Next Steps

As discussed in Chapter 8, the City intends on performing community outreach to adopt a set of green building guidelines over the next 12 to 18 months, which will reduce the impact of existing buildings and new development on the environment. Chapter 8 cited research from the ARB that indicated that residential and commercial buildings directly account for 22 percent of the GHG emissions in California.

There are a number of different ways that the City can embrace green building. The City could adopt a set of standards for new construction or retrofit projects that it is involved in. The City could also adopt a set of guidelines for adherence by commercial and residential developers. The U. S. Green Building Council has developed a framework, Leadership in Energy and Environmental Design (LEED), for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. In the Bay Area, jurisdictions have applied LEED standards to commercial (office, industrial, and retail) and public sector real estate projects. For residential development, a number of jurisdictions have adopted guidelines developed by Build-It-Green (Green Point Rated).

The City needs to become more active in organizations such as the U.S. Green Building Council (USGBC) and Build-It-Green that promulgate green building guidelines. These organizations can assist the City in moving forward and supply our community with the appropriate educational items. The costs of joining the USGBC are \$500 on an annual basis and Build-It-Green is \$200 on an annual basis. The City is evaluating the pros and cons of joining these organizations and developing a recommendation.

■ Action Item – Join ICLEI and Develop a GHG Emissions Inventory.

The International Council for Local Environmental Initiatives (ICLEI) is a membership association of local governments committed to advancing climate protection and sustainable development. ICLEI provides support and resources for implementing sustainability initiatives. To this end, ICLEI actively promotes a milestone-based five-step process to move communities forward:

- Conduct a baseline emissions inventory and forecast;
- Adopt an emissions reduction target for the forecast year;
- Develop a Local Climate Action Plan;
- Implement policies and measures; and
- Monitor and verify results.

In addition to supporting local governments develop sustainability initiatives, ICLEI has developed and supports the use of its Clean Air and Climate Protection

## Next Steps

(CACP) software that assists local governments create greenhouse gas inventories, quantify the benefits of reduction measures, and formulate local climate action plans. Numerous communities throughout the Bay Area have used this software to develop GHG inventories. Communities that have recently completed inventories using this software include Benicia, Richmond, and Hayward. City staff is currently not aware of any other applications to develop a GHG inventory. To this end, the City should become a member of ICLEI in order to acquire the software and to leverage the support and availability of additional resources that ICLEI makes available to its members.

In order to join ICLEI, the City needs to adopt a resolution and authorize the expenditure of funds for membership dues. Membership dues are \$1,750 per year. Membership includes access to various web-based training and resources and access to the CACP software to prepare a GHG emissions inventory. Attachment E is a sample resolution that ICLEI has asked the City to imulate.

### Developing Long-Term Strategy

There are two components to this:

1. Developing a Municipal Sustainability Plan; and
2. Developing a Climate Action Plan.

The Municipal Sustainability Plan will build on this report and consist of comprehensive implementation plan focusing on City operations. The Plan will be focused on generating cost savings, energy savings, reductions in GHG emissions, and energy independence. In order to accomplish these goals, the Plan will be comprehensive in that it will address not only the City's use of natural gas and electricity to power its facilities, but it will also consider fuel consumption for its fleet, water consumption, solid waste and recycling practices, and purchasing policies.

Funding for the Municipal Sustainability Plan will come from the funds allocated to the City under the Energy Efficiency and Conservation Block Grant Program of the American Recovery and Reinvestment Act. Upon receiving approval from the Department of Energy to invest its funds in this effort, the City anticipates it will take approximately 10 to 12 months to identify a consultant and complete the assignment.

In addition to the Municipal Sustainability Plan, as discussed in Chapter 8, the City aims to perform a Community Action Plan (CAP). The CAP will focus on policies





## Next Steps

for the City to adopt in order to achieve city-wide reductions in GHG emissions and promote a more sustainable community. Funding for this endeavor has not been secured; however, staff is hopeful that it will be able to secure grant funds for this project.

While the State has yet to mandate that local governments develop either of these two plans, it is likely that in order to achieve AB 32 emissions reductions targets that it is just a matter of time.

Leveraging existing funding opportunities and partnerships to generate cost savings, energy savings, and reduction in GHG emissions.

The City is drawing on resources from the federal government to jumpstart this initiative. Through the American Recovery & Reinvestment Act, the City was allocated \$984,500 through the Energy Efficiency and Conservation Block Grant (EECBG) program. To obtain these funds, the City was required to submit a plan indicating how it would invest this money to generate jobs, energy savings, and reductions in GHG emissions. The following is the list of projects that the City submitted:

- Municipal Sustainability Plan -- \$135,000 to \$140,000.
- Energy efficiency marketing program to Fairfield residents -- \$50,000. Provide education on (1) the techniques to reduce, reuse, and recycle to increase participation and efficiency rates in material conservation and recycle content programs; (2) building codes and inspection services to promote building energy; and (3) incentive programs from PG&E and tax credits from state and federal programs.
- Energy efficiency measures and renewable energy generation. The City indicated that it planned to spend the remaining funds (approximately \$800,000)



## Next Steps

on energy efficiency measures (i.e. lighting upgrades or a streetlight conversion project) that will generate energy and cost savings and a potential solar array for the Police Training Facility and Firing Range. The City is in the process of developing cost estimates for a number of projects and will select one or more projects that generate cost and energy savings, while demonstrating leadership to the community.

The City is also evaluating low-cost loan programs sponsored by the California Energy Commission and Federal Government to fund these projects.

Finally, the City is working with PG&E to complete energy audits of City facilities. The first phase of this work will be completed by the end of Summer 2009, and consists of recommendations to generate energy and cost savings for City facilities (i.e. Fire Stations, Fairfield Center for Creative Arts, and Allan Witt Multi-Sports Center) that are not part of the Civic Center Complex (City Hall, Police Department, City Council Chambers, Community Center, and Senior Center). The Civic Center Complex will be part of a second phase audit that is also being supported by PG&E. The City aims to kick-off the second phase energy audit assignment August 2009. The City is not expending any funds on either one of these two projects.



# Next Steps

## Proposed Budget

The following budget has been established to launch the City's sustainability initiative:

Item	Annual Cost	One-Time Cost	Source of Funds
<i>Immediate Action Items</i>			
US Mayors Climate Action Agreement	\$0	\$0	N/A
Tree City USA	\$0	\$0	N/A
Memberships			
Build-It-Green	\$200	\$0	TBD – Being evaluated
USGBC	\$500	\$0	TBD – Being evaluated
ICLEI	\$1,750	\$0	Redevelopment or Federal Funds
<i>Long Term Strategy Items</i>			
Municipal Sustainability Plan	\$0	\$137,500	EECBG
CAP	TBD		N/A
<i>Leveraging Financial Resources</i>			
Energy Audits of City Facilities	\$0	\$0	PG&E
Residential Marketing Program	\$0	\$50,000	EECBG
Energy Efficiency / Renewable Energy Project(s)	\$0	\$797,000	EECBG
<i>Other</i>			
Conferences / Workshops / Webinars	\$1,300	\$0	TBD – Being evaluated
Publications / Other Memberships	\$250	\$0	TBD – Being evaluated
Office supplies	\$500	\$0	TBD – Being evaluated
Miscellaneous Events	\$500	\$0	TBD – Being evaluated
<b>Total</b>	<b>\$5,000</b>	<b>\$984,500</b>	

Figure 11-2

This budget will be reviewed on an annual basis and will evolve as projects are developed, energy and cost savings are realized, and additional funding opportunities become available.





# Attachments

## **Attachment A**

AB 32 Fact Sheet

## **Attachment B**

Environmentally Preferable Purchasing Model Policy

## **Attachment C**

Implementation Plan Timeline

## **Attachment D**

The U.S. Mayors Climate Protection Agreement

## **Attachment E**

ICLEI Sample Resolution



### **AB 32 Fact Sheet - California Global Warming Solutions Act of 2006**

Establishes first-in-the-world comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases (GHG).

Makes the Air Resources Board (ARB) responsible for monitoring and reducing GHG emissions. Continues the existing Climate Action Team to coordinate statewide efforts.

Authorizes the Governor to invoke a safety valve in the event of extraordinary circumstances, catastrophic events or the threat of significant economic harm, for up to 12 months at a time.

Requires ARB to:

- Establish a statewide GHG emissions cap for 2020, based on 1990 emissions by January 1, 2008.
- Adopt mandatory reporting rules for significant sources of greenhouse gases by January 1, 2008.
- Adopt a plan by January 1, 2009 indicating how emission reductions will be achieved from significant GHG sources via regulations, market mechanisms and other actions.
- Adopt regulations by January 1, 2011 to achieve the maximum technologically feasible and cost-effective reductions in GHGs, including provisions for using both market mechanisms and alternative compliance mechanisms.
- Convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee to advise ARB.
- Ensure public notice and opportunity for comment for all ARB actions.
- Prior to imposing any mandates or authorizing market mechanisms, requires ARB to evaluate several factors, including but not limited to: impacts on California's economy, the environment, and public health; equity between regulated entities; electricity reliability, conformance with other environmental laws, and to ensure that the rules do not disproportionately impact low-income communities.
- Adopt a list of discrete, early action measures by July 1, 2007 that can be implemented before January 1, 2010 and adopt such measures.

#### **For More Information:**

Please contact the ARB toll-free at (800) END-SMOG/(800) 363-7664 (California only) or (800) 272-4572. For information on the ARB's Climate Change Program, visit [www.arb.ca.gov/cc/cc.htm](http://www.arb.ca.gov/cc/cc.htm). You may obtain this document in an alternative format by contacting ARB's Americans with Disabilities Act Coordinator at (916) 322-4505 (voice); (916) 324-9531 (TDD, Sacramento only); or (800) 700-8326 (TDD, outside Sacramento).

## **ENVIRONMENTALLY PREFERABLE PURCHASING MODEL POLICY**

PREPARED BY STOPWASTE.ORG (ALAMEDA COUNTY WASTE MANAGEMENT AUTHORITY  
AND SOURCE REDUCTION & RECYCLING BOARD)

### **1.0 STATEMENT OF POLICY**

It is the policy of [organization] to:

- institute practices that reduce waste by increasing product efficiency and effectiveness,
- purchase products that minimize environmental impacts, toxics, pollution, and hazards to worker and community safety to the greatest extent practicable, and
- purchase products that include recycled content, are durable and long-lasting, conserve energy and water, use agricultural fibers and residues, reduce greenhouse gas emissions, use unbleached or chlorine free manufacturing processes, are lead-free and mercury-free, and use wood from sustainably harvested forests.

### **2.0 PURPOSE**

This Policy is adopted in order to:

- conserve natural resources,
- minimize environmental impacts such as pollution and use of water and energy,
- eliminate or reduce toxics that create hazards to workers and our community,
- support strong recycling markets,
- reduce materials that are landfilled,
- increase the use and availability of environmentally preferable products that protect the environment,
- identify environmentally preferable products and distribution systems,
- reward manufacturers and vendors that reduce environmental impacts in their production and distribution systems or services,
- create a model for successfully purchasing environmentally preferable products that encourages other purchasers in our community to adopt similar goals.

### **3.0 SPECIFICATIONS**

#### **3.1 Source Reduction**

- 3.1.1 [Organization] shall institute practices that reduce waste and result in the purchase of fewer products whenever practicable and cost-effective, but without reducing safety or workplace quality.
- 3.1.2 [Organization] shall purchase remanufactured products such as toner cartridges, tires, furniture, equipment and automotive parts whenever practicable, but without reducing safety, quality or effectiveness.

## **Attachment B**

### **ENVIRONMENTALLY PREFERABLE PURCHASING *MODEL POLICY***

- 3.1.3 [Organization] shall require all equipment bought after the adoption of this policy to be compatible with source reduction goals as referred to in this section (3.1), when practicable.
- 3.1.4 All buyers shall consider short-term and long-term costs in comparing product alternatives, when feasible. This includes evaluation of total costs expected during the time a product is owned, including, but not limited to, acquisition, extended warranties, operation, supplies, maintenance, disposal costs and expected lifetime compared to other alternatives.
- 3.1.5 Products that are durable, long lasting, reusable or refillable are preferred whenever feasible.
- 3.1.6 [Organization] requests vendors to eliminate packaging or use the minimum amount necessary for product protection, to the greatest extent practicable.
- 3.1.7 Packaging that is reusable, recyclable or compostable is preferred, when suitable uses and programs exist.
- 3.1.8 Vendors shall be encouraged to take back and reuse pallets and other shipping and packaging materials.
- 3.1.9 Suppliers of electronic equipment, including but not limited to computers, monitors, printers, and copiers, shall be required to take back equipment for reuse or environmentally safe recycling when [organization] discards or replaces such equipment, whenever possible.
- 3.1.10 [Organization] shall consider provisions in contracts with suppliers of non-electronic equipment that require suppliers to take back equipment for reuse or environmentally safe recycling when [organization] discards or replaces such equipment, whenever practicable.
- 3.1.11 All documents shall be printed and copied on both sides to reduce the use and purchase of paper, whenever practical.

### **3.2 Recycled Content Products**

- 3.2.1 All products for which the United States Environmental Protection Agency (U.S. EPA) has established minimum recycled content standard guidelines in the Agency's Comprehensive Procurement Guidelines, such as those for printing paper, office paper, janitorial paper, construction, landscaping, parks and recreation, transportation, vehicles, miscellaneous, and non-paper office products, shall contain the highest postconsumer content practicable, but no less than the minimum recycled content standards established by the U.S. EPA Guidelines.
- 3.2.2 Copiers and printers purchased shall be compatible with the use of recycled content and remanufactured products.
- 3.2.3 In accordance with California Public Contract Code, Sec. 10409, [organization] shall purchase re-refined lubricating and industrial oil for use in its vehicles and other

## **Attachment B**

### **ENVIRONMENTALLY PREFERABLE PURCHASING *MODEL POLICY***

equipment, as long as it is certified by the American Petroleum Institute (API) as appropriate for use in such equipment.

- 3.2.4 When specifying asphalt concrete, aggregate base or portland cement concrete for road construction projects, [organization] shall use recycled, reusable or reground materials when practicable.
- 3.2.5 [Organization] shall specify and purchase recycled content transportation products, including signs, cones, parking stops, delineators, channelizers and barricades, which shall contain the highest postconsumer content practicable, but no less than the minimum recycled content standards established by the U.S. EPA Comprehensive Procurement Guidelines.
- 3.2.6 All pre-printed recycled content papers intended for distribution that are purchased or produced shall contain a statement that the paper is recycled content. Whenever feasible, the statement should indicate the percentage of postconsumer recycled content it contains.

### **3.3 Energy and Water Savings**

- 3.3.1 Where applicable, energy-efficient equipment shall be purchased with the most up-to-date energy efficiency functions. This includes, but is not limited to, high efficiency space heating systems and high efficiency space cooling equipment.
- 3.3.2 When practicable, [organization] shall replace inefficient interior lighting with energy-efficient equipment.
- 3.3.3 When practicable, [organization] shall replace inefficient exterior lighting, street lighting and traffic signal lights with energy-efficient equipment. Exterior lighting shall be minimized where possible to avoid unnecessary lighting of architectural and landscape features while providing adequate illumination for safety and accessibility.
- 3.3.4 All products purchased by [organization] and for which the U. S. EPA Energy Star certification is available shall meet Energy Star certification, when practicable. When Energy Star labels are not available, [organization] shall choose energy-efficient products that are in the upper 25% of energy efficiency as designated by the Federal Energy Management Program.
- 3.3.5 [Organization] shall purchase water-saving products whenever practicable. This includes, but is not limited to, high-performance fixtures like toilets, low-flow faucets and aerators, and upgraded irrigation systems.

### **3.4 Green Building**

- 3.4.1 All building and renovations undertaken by [organization] shall follow Green Building Practices for design, construction, and operation, where appropriate, as described in the LEED<sup>TM</sup> Rating System.

### **3.5 Landscaping**



## Attachment B

### ENVIRONMENTALLY PREFERABLE PURCHASING *MODEL POLICY*

- 3.5.1 All landscape renovations, construction and maintenance performed by [organization], including workers and contractors providing landscaping services for [organization], shall employ Bay-Friendly Landscaping or sustainable landscape management techniques for design, construction and maintenance whenever possible, including, but not limited to, integrated pest management, grasscycling, drip irrigation, composting, and procurement and use of mulch and compost that give preference to those produced from regionally generated plant debris and/or food waste programs.
- 3.5.2 Plants should be selected to minimize waste by choosing species for purchase that are appropriate to the microclimate, species that can grow to their natural size in the space allotted them, and perennials rather than annuals for color. Native and drought-tolerant plants that require no or minimal watering once established are preferred.
- 3.5.3 Hardscapes and landscape structures constructed of recycled content materials are encouraged. [Organization] shall limit the amount of impervious surfaces in the landscape, wherever practicable. Permeable substitutes, such as permeable asphalt or pavers, are encouraged for walkways, patios and driveways.

### **3.6 Toxics and Pollution**

- 3.6.1 To the extent practicable, [organization] shall purchase, or require janitorial contractors to supply, industrial and institutional cleaning products that meet Green Seal certification standards for environmental preferability and performance.
- 3.6.2 To the extent practicable, [organization] shall purchase, or require janitorial contractors to supply, vacuum cleaners that meet the requirements of the Carpet and Rug Institute “Green Label” Testing Program – Vacuum Cleaner Criteria, are capable of capturing 96% of particulates 0.3 microns in size, and operate with a sound level less than 70dBA. Where possible and as applicable, other janitorial cleaning equipment shall be capable of capturing fine particulates, removing sufficient moisture so as to dry within 24 hours, operate with a sound level less than 70dBA, and use high-efficiency, low-emissions engines.
- 3.6.3 The use of chlorofluorocarbon and halon-containing refrigerants, solvents and other products shall be phased out and new purchases of heating/ventilating/air conditioning, refrigeration, insulation and fire suppression systems shall not contain them.
- 3.6.4 All surfactants and detergents shall be readily biodegradable and, where practicable, shall not contain phosphates.
- 3.6.5 When maintaining buildings and landscapes, [organization] shall manage pest problems through prevention and physical, mechanical and biological controls. [Organization] may either adopt and implement an organic pest management policy and practices or adopt and implement an Integrated Pest Management (IPM) policy and practices using the least toxic pest control as a last resort.
- 3.6.6 When maintaining buildings, the [organization] shall use products with the lowest amount of volatile organic compounds (VOCs), highest recycled content, and low or no formaldehyde when practicable when purchasing materials such as paint, carpeting, adhesives, furniture and casework.

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### **ENVIRONMENTALLY PREFERABLE PURCHASING *MODEL POLICY***

- 3.6.7 [Organization] shall reduce or eliminate its use of products that contribute to the formation of dioxins and furans. This includes, but is not limited to:
- Purchasing paper, paper products, and janitorial paper products that are unbleached or that are processed without chlorine or chlorine derivatives, whenever possible.
  - Prohibiting purchase of products that use polyvinyl chloride (PVC) such as, but not limited to, office binders, furniture, flooring, and medical supplies whenever practicable.
- 3.6.8 [Organization] shall purchase products and equipment with no lead or mercury whenever possible. For products that contain lead or mercury, [organization] shall give preference to those products with lower quantities of these metals and to vendors with established lead and mercury recovery programs.
- 3.6.9 [Organization] shall specify that desktop computers, notebooks and monitors purchased meet, at a minimum, all Electronic Product Environmental Assessment Tool (EPEAT) environmental criteria designated as “required” as contained in the IEEE 1680 Standard for the Environmental Assessment of Personal Computer Products, whenever practicable.
- 3.6.10 When replacing vehicles, [organization] shall consider less-polluting alternatives to diesel such as compressed natural gas, bio-based fuels, hybrids, electric batteries, and fuel cells, as available.

### **3.7 Forest Conservation**

- 3.7.1 To the greatest extent practicable, [organization] shall not procure wood products such as lumber and paper that originate from forests harvested in an environmentally unsustainable manner. When possible, [organization] shall give preference to wood products that are certified to be sustainably harvested by a comprehensive, performance-based certification system. The certification system shall include independent third-party audits, with standards equivalent to, or stricter than, those of the Forest Stewardship Council certification.
- 3.7.2 [Organization] encourages the purchase or use of previously used or salvaged wood and wood products whenever practicable.

### **3.8 Bio-Based Products**

- 3.8.1 Vehicle fuels made from non-wood, plant-based contents such as vegetable oils are encouraged whenever practicable.
- 3.8.2 Paper, paper products and construction products made from non-wood, plant-based contents such as agricultural crops and residues are encouraged whenever practicable.
- 3.8.3 Bio-based plastic products that are biodegradable and compostable, such as bags, film, food and beverage containers, and cutlery, are encouraged whenever practicable.

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### **ENVIRONMENTALLY PREFERABLE PURCHASING *MODEL POLICY***

- 3.8.4 Compostable plastic products purchased shall meet American Society for Testing and Materials (ASTM) standards as found in ASTM D6400-04. Biodegradable plastics used as coatings on paper and other compostable substrates shall meet ASTM D6868-03 standards.
- 3.8.5 Proof of compliance with ASTM standards for compostable, biodegradable and degradable plastic products shall be provided by vendors of such products, upon request. One acceptable proof of compliance for compostable plastic products will be certification by the Biodegradable Products Institute (BPI).

#### **4.0 PRIORITIES**

- 4.1 The health and safety of workers and citizens is of utmost importance and takes precedence over all other policies.
- 4.2 [Organization] has made significant investments in developing a successful recycling system and recognizes that recycled content products are essential to the continuing viability of that recycling system and for the foundation of an environmentally sound production system. Therefore, to the greatest extent practicable, recycled content shall be included in products that also meet other specifications, such as chlorine free or bio-based.
- 4.3 Nothing contained in this policy shall be construed as requiring a department, purchaser or contractor to procure products that do not perform adequately for their intended use, exclude adequate competition, or are not available at a reasonable price in a reasonable period of time.
- 4.4 Nothing contained in this policy shall be construed as requiring the [organization], department, purchaser or contractor to take any action that conflicts with local, state or federal requirements.

#### **5.0 IMPLEMENTATION**

- 5.1 The [Director of Purchasing, Director of Finance, other responsible director] shall implement this policy in coordination with other appropriate [organization] personnel.
- 5.2 As applicable, successful bidders shall certify in writing that the environmental attributes claimed in competitive bids are accurate. In compliance with State law, vendors shall be required to specify the minimum or actual percentage of recovered and postconsumer material in their products, even when such percentages are zero.
- 5.3 Upon request, buyers making the selection from competitive bids shall be able to provide justification for product choices that do not meet the environmentally preferable purchasing criteria in this policy.
- 5.4 Purchasers shall include businesses certified by the Bay Area Green Business Program in requests for products and services.
- 5.5 Vendors, contractors and grantees shall be encouraged to comply with applicable sections of this policy for products and services provided to the [organization], where practicable.

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## ENVIRONMENTALLY PREFERABLE PURCHASING *MODEL POLICY*

### 6.0 PROGRAM EVALUATION

- 6.1 The [Director of Finance, Director of Purchasing, other position responsible for implementing this policy] shall periodically evaluate the success of this policy's implementation.

### 7.0 DEFINITIONS

- 7.1 "American Society for Testing and Materials" means ASTM International, an open forum for the development of high quality, market relevant international standards use around the globe.
- 7.2 "Bay Area Green Business Program" is a partnership of governments and businesses that certifies the environmental performance of government agencies and businesses.
- 7.3 "Bay-Friendly Landscaping" means working with the natural ecosystems of the San Francisco Bay Area to foster soil health, to reduce runoff and pollution, prevent and reuse plant waste, conserve water and other natural resources. Bay-Friendly Landscaping practices are described in the *Bay-Friendly Landscape Guidelines*, by StopWaste.Org.
- 7.4 "Bio-Based Products" means commercial or industrial products (other than food or feed) that utilize agricultural crops or residues but does not include products made from forestry materials.
- 7.5 "Biodegradable plastic" means the degradation of the plastic must occur as a result of the action of naturally occurring microorganisms.
- 7.6 "Biodegradable Products Institute" (BPI) is a multi-stakeholder association of key individuals and groups from government, industry and academia, which promotes the use, and recycling of biodegradable polymeric materials (via composting). BPI does not create standards but certifies products that demonstrate they meet the requirements in ASTM D6400 or D6868, based on testing in an approved laboratory.
- 7.7 "Buyer" means anyone authorized to purchase or contract for purchases on behalf of [organization] or its subdivisions.
- 7.8 "The Carpet and Rug Institute" (CRI) is the national trade association representing the carpet and rug industry. CRI has developed and administered the "Green Label" indoor air quality testing and labeling program for carpet, adhesives, cushion materials and vacuum cleaners. The "Green Label Plus" testing program incorporates additional requirements to meet California's Collaborative for High Performance Schools low-emitting materials criteria.
- 7.9 "Chlorine free" means products processed without chlorine or chlorine derivatives.
- 7.10 "Compostable plastic" means plastic that is biodegradable during composting to yield carbon dioxide, water and inorganic compounds and biomass, at a rate consistent with other known compostable materials and leaves no visually distinguishable or toxic residues.

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- 7.11 “Contractor” means any person, group of persons, business, consultant, designing architect, association, partnership, corporation, supplier, vendor or other entity that has a contract with [organization] or serves in a subcontracting capacity with an entity having a contract with [organization] for the provision of goods or services.
- 7.12 “Degradable plastic” means plastic that undergoes significant changes in its chemical structure under specific environmental conditions.
- 7.13 “Dioxins and furans” are a group of chemical compounds that are classified as persistent, bioaccumulative, and toxic by the U.S. Environmental Protection Agency (EPA).
- 7.14 “Energy Star” means the U.S. EPA’s energy efficiency product labeling program.
- 7.15 “Energy Efficient Product” means a product that is in the upper 25% of energy efficiency for all similar products, or that is at least 10% more efficient than the minimum level that meets Federal standards.
- 7.16 “Electronic Product Environmental Assessment Tool” (EPEAT) is a procurement tool to help institutional purchasers in the public and private sectors evaluate, compare and select desktop computers, notebooks and monitors based on their environmental attributes.
- 7.17 “Federal Energy Management Program” is a program of the Department of Energy that issues a series of *Product Energy Efficiency Recommendations* that identify recommended efficiency levels for energy-using products.
- 7.18 The “Forest Stewardship Council” is a global organization that certifies responsible, on-the-ground forest management according to rigorous standards developed by a broad variety of stakeholder groups.
- 7.19 “Green Building Practices” means a whole-systems approach to the design, construction, and operation of buildings and structures that helps mitigate the environmental, economic, and social impacts of construction, demolition, and renovation. Green Building Practices such as those described in the LEED<sup>TM</sup> Rating System, recognize the relationship between natural and built environments and seeks to minimize the use of energy, water, and other natural resources and provide a healthy productive environment.
- 7.20 “Green Seal” is an independent, non-profit environmental labeling organization. Green Seal standards for products and services meet the U.S. EPA’s criteria for third-party certifiers. The Green Seal is a registered certification mark that may appear only on certified products.
- 7.21 “Integrated Pest Management (IPM)” is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that



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### ENVIRONMENTALLY PREFERABLE PURCHASING *MODEL POLICY*

minimizes risks to human health, beneficial and nontarget organisms, and the environment.

- 7.22 “LEED™ Rating System” means the most recent version of the Leadership in Energy and Environmental Design (LEED™) Commercial Green Building Rating System, or other related LEED™ Rating System, approved by the U.S. Green Building Council and designed for rating new and existing commercial, institutional, and high-rise residential buildings.
- 7.23 “Organic Pest Management” prohibits the use and application of toxic chemical pesticides and strives to prevent pest problems through the application of natural, organic horticultural and maintenance practices. All pest control products shall be in keeping with, but not limited to, those products on the approved list of California Certified Organic Foods (CCOF).
- 7.24 "Postconsumer Material" means a finished material which would normally be disposed of as a solid waste, having reached its intended end-use and completed its life cycle as a consumer item, and does not include manufacturing or converting wastes.
- 7.25 “Practical” and “Practicable” mean whenever possible and compatible with local, state and federal law, without reducing safety, quality, or effectiveness and where the product or service is available at a reasonable cost in a reasonable period of time.
- 7.26 “Preconsumer Material” means material or by-products generated after manufacture of a product is completed but before the product reaches the end-use consumer. Preconsumer material does not include mill and manufacturing trim, scrap, or broke which is generated at a manufacturing site and commonly reused on-site in the same or another manufacturing process.
- 7.27 “Recovered Material” means fragments of products or finished products of a manufacturing process, which has converted a resource into a commodity of real economic value, and includes preconsumer and postconsumer material but does not include excess resources of the manufacturing process.
- 7.28 “Recycled Content” means the percentage of recovered material, including preconsumer and postconsumer materials, in a product.
- 7.29 “Recycled Content Standard” means the minimum level of recovered material and/or postconsumer material necessary for products to qualify as “recycled products.”
- 7.30 “Recycled Product” means a product that meets [organization’s] recycled content policy objectives for postconsumer and recovered material.
- 7.31 “Remanufactured Product” means any product diverted from the supply of discarded materials by refurbishing and marketing said product without substantial change to its original form.
- 7.32 “Reused Product” means any product designed to be used many times for the same or other purposes without additional processing except for specific requirements such as cleaning, painting or minor repairs.

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### **ENVIRONMENTALLY PREFERABLE PURCHASING *MODEL POLICY***

- 7.33 “Source Reduction” refers to products that result in a net reduction in the generation of waste compared to their previous or alternate version and includes durable, reusable and remanufactured products; products with no, or reduced, toxic constituents; and products marketed with no, or reduced, packaging.
- 7.34 “U.S. EPA Guidelines” means the Comprehensive Procurement Guidelines established by the U.S. Environmental Protection Agency for federal agency purchases as of May 2002 and any subsequent versions adopted.
- 7.35 “Water-Saving Products” are those that are in the upper 25% of water conservation for all similar products, or at least 10% more water-conserving than the minimum level that meets the Federal standards.

#### **8.0 EFFECTIVE DATES**

- 8.1 This policy shall take effect on [date].

# Attachment C

Projects and Implementation Tasks	Lead Dept	FY 2009/2010 (Quarterly)				Annual		
		Qtr 1	Qtr 2	Qtr 3	Qtr 4	FY 10/11	FY 11/12	FY 12/13
Adopt US Mayors Climate Action Agreement	CMO							
Tree City USA	CMO							
Complete Application								
Mayors Proclamation								
Tree Event (Tomato Festival)	Green Team							
Complete Energy Audits	CMO							
Energy Efficiency and Conservation Block Grant								
Submit Grant Application	CMO							
Municipal Sustainability Plan	CMO							
Energy Efficiency, Streetlight Retrofit, or Solar Project								
Residential Marketing Project	CMO							
Join Build-It-Green / Attend Committee Meetings	CMO							
Join ICLEI (Implement ICLEI's 5 Steps Outlined Below)	CMO							
Purchase Software / Perform GHG Inventory (In House)	CMO/CD							
Identify and Commit to a GHG Reduction Target	CMO/CD							
Developing Local Action Plan to Reach Target [See Below -- Climate Action Plan]	CMO/CD							
Implementing Steps	CMO/CD							
Monitoring and Tracking Results	CMO/CD							
Monitor Legislation and Grant Opportunities	CMO							
Foster Collaboration and Partnerships With Adjacent Governments	CMO							
Track Electricity, Nat Gas, Water, and Fuel Usage	CMO							
Develop Reporting Tool	CMO							
Develop / Implement Community Outreach / Education Campaign	CMO							
Green Building Ordinance	CMO / CD							
Research and Draft Ordinance								
Solicit Public Input								
City Council Adoption								
Environmental Purchasing Policy	CMO/FIN							
Research and Draft Policy								
City Council Adoption, If Necessary								
Community Wide Action Plan / Local Climate Action Plan	CMO							
Research Existing Plans	CMO / CD							
Research And Apply for Grant Funds	CMO / CD							
Develop Request For Proposal	CD							
Issue RFP and Select Consultant	CMO / CD							
Community Action Planning	CMO / CD							



### **The U.S. Mayors Climate Protection Agreement** **(As endorsed by the 73<sup>rd</sup> Annual U.S. Conference of Mayors meeting, Chicago, 2005)**

- A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;
- B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that 1) includes clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries; and
- C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:
  - 1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.
  - 2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;
  - 3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;
  - 4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;
  - 5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;
  - 6. Purchase only Energy Star equipment and appliances for City use;
  - 7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;
  - 8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
  - 9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
  - 10. Increase recycling rates in City operations and in the community;
  - 11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO<sub>2</sub>; and
  - 12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.



## Sample Resolution ICLEI Membership

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WHEREAS, scientific consensus has developed that carbon dioxide (CO<sub>2</sub>) and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate; and

WHEREAS, the 2007 Fourth Assessment Report from the Intergovernmental Panel on Climate Change (IPCC) states that it is very likely that most of the observed increases in globally averaged temperatures since the mid-20<sup>th</sup> century are due to human-induced greenhouse gas emissions; and

WHEREAS, in 2006 the U.S. National Climatic Data Center confirmed clear evidence of human influences on climate due to changes in greenhouse gases; and

WHEREAS, the U.S. Conference of Mayors endorsed the 2005 U.S. Mayors' Climate Protection Agreement initiated by Seattle Mayor Nickels and signed by more than 916 mayors in the United States as of March 2009; and

WHEREAS, the Urban Environmental Accords adopted by local government delegates during UN World Environment Day 2005 call for reduced emissions through energy efficiency, land use and transportation planning, waste reduction, and wiser energy management; and

WHEREAS, in 2003 the American Geophysical Union adopted a Statement noting that human activities are increasingly altering the Earth's climate and that natural influences cannot explain the rapid increase in near-surface temperatures observed during the second half of the 20<sup>th</sup> century; and

WHEREAS, in 2001, at the request of the Administration, the National Academy of Sciences (NAS) reviewed and declared global warming a real problem likely due to human activities; and

WHEREAS, the 2000 U.S. Global Change Research Program's (USGCRP) First National Assessment indicated that global warming has begun; and

WHEREAS, 162 countries including the United States pledged under the United Nations Framework Convention on Climate Change to reduce their greenhouse gas emissions; and

WHEREAS, energy consumption, specifically the burning of fossil fuels, accounts for more than 80% of U.S. greenhouse gas emissions; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the local government, its businesses, and its residents; and

WHEREAS, ICLEI – Local Governments for Sustainability has invited the **City/Town/County** to join ICLEI;

NOW THEREFORE, BE IT RESOLVED, that the **City/Town/County of \_\_\_\_\_, State** will join ICLEI as a Full Member and pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change.

BE IT FURTHER RESOLVED, that the **City/Town/County** will undertake ICLEI's five milestones to reduce both greenhouse gas and air pollution emissions throughout the community, and specifically:

- Conduct a greenhouse gas emissions inventory and forecast to determine the source and quantity of greenhouse gas emissions in the jurisdiction;
- Establish a greenhouse gas emissions reduction target;
- Develop an action plan with both existing and future actions which when implemented will meet the local greenhouse gas reduction target;
- Implement the action plan; and
- Monitor and report progress; and

BE IT FINALLY RESOLVED that the **City/Town/County of \_\_\_\_\_** requests assistance from ICLEI as it progresses through the milestones.





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